Appendix E: Other Supporting Documents

Statewide ITS Deployment Plan (04-21-03)
Five-Year Airport Capital Improvement Program
Statewide Pedestrian & Bicycle Plan

Statewide ITS Deployment Plan (04-21-03)

TRANSCORE

TRANSCORE

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LIST OF EXHIBITS

LIST OF ACRONYMS

ADA – American with Disabilities Act
AHS – Automated Highway Systems
APTS – Advanced Public Transportation System
ATIS – Advanced Traveler Information System
ATMS – Advanced Transportation Management System
AVI – Automatic Vehicle Identification
AVL – Automatic Vehicle Location
CCTV – Closed Circuit Television
CVIEW – Commercial Vehicle Information Exchange Window
CVISN – Commercial Vehicle Information Systems Networks
CVO – Commercial Vehicle Operations
EM – Emergency Management
ESS – Environmental Sensing Station
ETS – Event Tracking System
HAR – Highway Advisory Radio
HOV – High Occupancy Vehicle
ISP – Independent Service Provider
ITS – Intelligent Transportation System
MAG – Mountainland Association of Governments
MHz – Mega-Hertz
NTCIP – National Transportation Communications for ITS Protocol
POE – Port of Entry
RWIS – Road Weather Information System
STIP – Statewide Transportation Improvement Plan
TCC – Traffic Control Center
TMS – Traffic Monitoring Station
TOC – Traffic Operations Center
UDOT – Utah Department of Transportation
UTA – Utah Transit Authority
VMS – Variable Message Sign
WFRC – Wasatch Front Regional Council
WIM – Weigh-in-Motion

1. INTRODUCTION

This Intelligent Transportation System (ITS) Deployment Plan has been prepared in support of the Utah Department of Transportation's (UDOT) continued deployment and expansion of ITS projects throughout the State of Utah. UDOT envisions each deployment being linked to the UDOT Traffic Operations Center (TOC) in Salt Lake City as part of the State's Advanced Transportation Management System (ATMS), CommuterLink. This document identifies, at a high and conceptual level, desired ATMS deployments throughout the State. The purpose, therefore, is to let local project managers incorporate and mainstream the construction of these deployments as part of their routine and programmed construction projects. The operating and maintenance issues involved with these deployments, such as identifying the department's future direction, goals, funding, system obsolescence, and agency responsibilities, will be addressed in a separate ITS Strategic Plan report.

1.1 Background

UDOT has a proven track record of successfully deploying innovative and multi-agency ITS projects. The State's ITS program, known as CommuterLink, serves as the transportation and emergency response backbone for the application of advanced technologies on the transportation network throughout the State. During the past three years, CommuterLink has been instrumental in using technology to address safety and congestion issues on the transportation network in and around the Salt Lake City metropolitan area.

CommuterLink was instrumental for traffic management during the 2002 Winter Olympic Games, and public awareness of this system has enhanced UDOT's exposure to the traveler. CommuterLink received a national award for the launch of the CommuterLink website, which provides real-time traffic information and was selected by the Salt Lake Olympic Operating Committee to serve as the official transportation site during the Olympics.

This Deployment Plan has been prepared based on initial input from the UDOT Traffic Operations Center (TOC) and 4 Regions. The proposed projects, described within this plan, were identified through several sources including interviews, review of existing project and transportation plans, and a Deployment Plan Workshop designed to solicit input from each of the Regions. The intent is to provide a general overview of planned activities and anticipated funding for the State over the next five years and link these to the Department's future ITS deployment plans.

1.2 Coordination with UDOT STIP

The UDOT Statewide Transportation Improvement Program (STIP) is a five-year program of highway and transit projects for the State of Utah. The STIP is developed through a cooperative process between UDOT, Metropolitan Planning Organizations, Federal, City, and County governments. Specific ITS projects are identified in the STIP with funding and a timeline for deployment associated with each project; however, many other construction projects within the STIP should consider and incorporate ITS elements to promote and mainstream ITS expansion efforts. Although this Deployment Plan must tie directly to those

projects detailed in the STIP, as the identified projects have allocated funding and stakeholder support, its goal is to identify the short term goals of the ITS Division.

1.3 Statewide ITS Architecture

UDOT has developed a Statewide ITS Architecture based on the National ITS Architecture (see Exhibit 1) developed by the Federal Highway Administration (FHWA). The goal of the Statewide ITS Architecture is to provide a coordinated framework for planning and implementing ITS technologies across the State. ITS projects that will receive federal funding will be required by FHWA to be compliant with this architecture in order to be funded; therefore, the UDOT ITS Program has developed its plans for ITS expansion with this in mind.

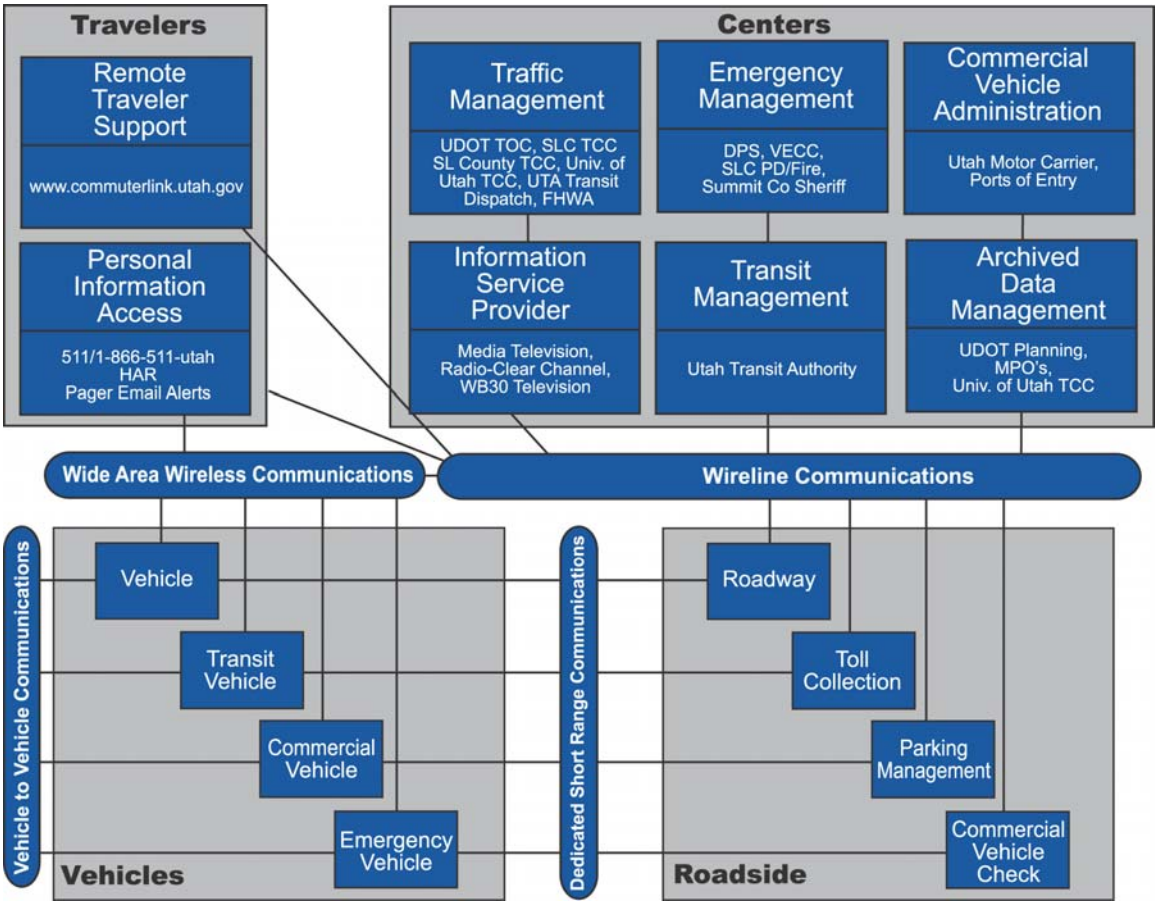

Exhibit 1: UDOT ITS Physical Architecture Diagram

1.4 Application of this Document

This document is intended to provide an overview of the current UDOT ITS program, identify candidate ITS deployments over the next 20 years, and establish a mechanism by which these deployments can be incorporated into the ITS program as a part of STIP projects. It is expected that UDOT project managers will review this document initially to gain an understanding of the ITS program and goals and then periodically review it as new

STIP projects are developed, considered, or funded in order to identify opportunities for mainstream ITS technologies into the project.

While the goals and methodologies of this document will be applicable for some time, the specific ITS deployments identified will likely change shortly after publication. Therefore, to provide updated information and facilitate project manager involvement, the UDOT ITS department has developed a website (see Section 3) with an interactive map that shows current ITS deployments and planned STIP projects. Using this map and ITS selection criteria discussed later in this document, a project manager could locate his or her STIP project, identify potential ITS elements that could be incorporated as a part of the project, and then contact the ITS department to discuss options.

This document and the tools presented are not intended to definitively identify every desired ITS element but rather create an open dialogue between the ITS department and the various STIP project managers. This tool also allows other agencies not directly responsible for a STIP project but affected by it to identify opportunities to coordinate ITS deployments with the STIP project that might not have existed otherwise.

2. EXISTING ITS PROGRAM AREAS AND GROWTH AREAS

Within the UDOT ITS Program, there are five core areas for ITS expansion:

- Advanced Traffic Management Systems (ATMS)
- Advanced Traveler Information Systems (ATIS)
- Commercial Vehicle Operations (CVO)
- Rural Deployments
- Miscellaneous ITS Applications

This section gives a brief explanation and overview of existing deployments within each ITS program area along with opportunities for expansion – termed growth areas.

A series of Deployment Plan workshops were held with members of the various UDOT Regions. The objective of the workshops was to solicit input from stakeholders on the projects proposed as part of their Region's Deployment Plan. Information relating to problem areas and potential ITS applications was collected. These potential ITS applications are presented here as growth areas and represent those ideas brought forward by stakeholders at the workshop. This input gives insight as to areas in which stakeholders feel there is a potential application UDOT should consider when expanding the current ITS network.

2.1 Advanced Traffic Management Systems (ATMS)

2.1.1. ATMS – Existing

The UDOT Advanced Traffic Management Systems program area consists of the following five types of existing ITS deployments.

Signal Coordination

UDOT has over 600 signals online at the TOC and integrated Traffic Control Centers (TCCs). From any of these centers, engineers can monitor special events or incidents and adjust signal coordination or operating plans accordingly. Engineers are constantly evaluating traffic conditions and adjusting signal times to maximize the flow of traffic (via real-time monitoring and traffic responsive calibrations). To a great extent, these signals operate in a preprogrammed time-of-day mode.

Closed Circuit Television (CCTV) Cameras

More than 200 CCTVs are deployed along the State's freeway and arterial systems to provide the TOC operators with a real-time look at traffic. These cameras, used only for traffic management and public safety, have resulted in a faster response time of emergency vehicles to accidents, fewer secondary accidents, and less traffic delay. By accessing the cameras on-line at www.commuterlink.utah.gov, the public can check for potential traffic problems on their preferred routes before leaving home or the office, to "Know Before You Go". The news media can also access CCTV video via two dedicated video feeds to each major television station in Salt Lake, and via the provision of office space in the TOC for radio announcers (currently occupied by ClearChannel radio).

Variable Message Signs (VMS)

UDOT has over 69 VMS deployed statewide to deliver up-to-the-minute information to motorists already on the road. These electronic signs notify motorists of problems and recommend actions to avoid the problems. This information may be congestion information, adverse driving conditions, or other emergencies. The information allows drivers to either re-route to their destination, or at the very least, to inform them of the problem and potential impact (i.e., expected delay time) to help relieve frustration. To maximize their effectiveness, the signs are left blank when conditions are normal and only used when there is a pertinent message to be disseminated.

Traffic Monitoring Stations (TMS)

Located primarily within the Wasatch Front area, approximately 150 TMSs have been deployed to collect and calculate vehicle speed, occupancy, volume, and average vehicle length data on a lane-by-lane basis.

Ramp Meter Stations (RMS)

Along I-15 and within the Salt Lake Valley, 17 RMS's are currently operating to manage freeway mainline flows. Currently operating in a time-of-day mode, these meters control the volume of vehicles accessing the freeway at the on-ramps. UDOT is currently developing new central software and controller firmware to incorporate the TMS and RMS functionality into a single application, and will be the first site in the country to communicate using the National Transportation Communications for ITS Protocol (NTCIP). The upgrades will also add traffic responsiveness at the local ramp level.

Road Weather Information Systems (RWIS)

RWIS deployment is continuing to be expanded on a statewide level with particular emphasis currently being given to Region 4. Weather information displayed on the website and verbalized in the 511 system is currently obtained from twice daily updates from shed foreman and TOC operators. The long-term goal is to deploy sufficient RWIS units such that these devices can replace the manual updates.

2.1.2. ATMS – Growth Areas

The stakeholders identified the following growth areas within the UDOT Advanced Traffic Management Systems program area.

Traffic Management

Deployment of CommuterLink workstations to Regional headquarters and key municipalities to provide access to ITS elements (i.e., video, sign, and traffic signal control) has been identified as a priority item for future CommuterLink expansion activities. The use of data from the traffic management system was also noted as a need in expanding UDOT's freeway management capabilities. Internally there is also a need to provide data to users in real-time (planning/engineers/Information Service Providers (ISPs)).

The need for additional engineering expertise and for managing traffic flows between freeway and arterial streets during an incident was expressed, as was the basis of an idea of using VMSs to advise motorists on ideal speeds to smooth traffic flows. Stakeholders would also like to get a better idea of the information needs of CVO fleet managers as it pertains to freeway management. Stakeholders felt the TOC cameras could also be used for work zone improvements.

Summary of Growth Areas for Traffic Management:

- Deployment of CommuterLink workstations to partner agencies
- Use of TOC data for planning
- Incident management capability
- Freeway management – traffic smoothing, CVO, work zones

Emergency Management

Challenges in the area of emergency management are in understanding the provider's needs from the DOT perspective and how UDOT could assist in providing needed information to emergency management dispatch centers and responders. Stakeholders felt there was a need to let the public know about UDOT involvement with emergency service providers to promote a better understanding of the coordination currently in place, as well as to educate the public on safety services that are available during times of crisis. UDOT understands the need of center-to-center information exchange in the area of emergency management. One technology area that could assist the emergency management community is automatic vehicle location (AVL). Continued integration of the disparate emergency management computer aided dispatch (CAD) systems is also deemed a high priority to provide global viewing, in real-time, of incident or other transportation related issues statewide. UDOT has won an FHWA competition for a CAD-ATMS field operational test that outlines these integration goals, mobile command center integration, and AVL deployment / monitoring.

Summary of Growth Areas for Emergency Management:

- Deployment of AVL for emergency management
- CAD-ATMS integration on a statewide level
- Mobile command center integration

Security/ Infrastructure

The federal government is implementing a number of Homeland Security initiatives aimed at protecting critical infrastructure within the transportation system. These initiatives can also provide significant opportunity to improve existing UDOT ITS systems or implement new ones in conjunction with the security component of the Homeland Security program. UDOT will pursue these opportunities as it continues efforts on evacuation planning, monitoring critical infrastructure, and evaluating emergency processes and procedures. A key to security and infrastructure initiatives are communications, they are a high priority when addressing security and infrastructure monitoring activities.

Summary of Growth Areas for Security/ Infrastructure:

- Homeland Security initiatives
- Evacuation planning, monitoring, and critical infrastructure

- Communication needs to support transportation security

Traffic Signal Systems

Stakeholders expressed interest in several areas within traffic signal design and operation that could be addressed in the future. These areas included improved transit signal priority systems, dilemma zone design, video detection and imaging, pedestrian technology (safety improvements), and intersection improvement and monitoring. Access management issues were discussed as they related to corridor preservation agreements with other agencies. Integration of all signal systems into the TOC was seen as a priority.

An eventual goal for signal coordination is to also deploy Adaptive Signal Control along major corridors to automatically measure traffic conditions and adjust phase times in response to real-time conditions. Adaptive signal control has evolved greatly in the past few years and is becoming more mainstreamed in new signal system deployments throughout the country. Studies by the University of Utah have also shown that the use of Adaptive Signal Control is more effective on corridors that experience high volatility in phase usage (i.e., near schools, diversion routes, shopping centers, and so forth). Defining candidate corridors and implementing a demonstration project has been identified as a next logical step for CommuterLink.

Summary of Growth Areas for Traffic Signal Systems:

- Improved signal design and operations
- Address access management issues
- Integration of all signal systems with TOC
- Identify corridors for potential Adaptive Signal Control deployment
- Define desired performance measures and deploy an adaptive signal control demonstration project

Parking Management

Parking Management systems deal with the electronic monitoring and management of parking facilities. UDOT's interface with this system occurs during special events promoting ride sharing and transit. Utah Transit Authority (UTA) is currently taking the lead with respect to parking management activities, but further coordination and integration into the CommuterLink System to provide users with real-time information on parking status via the CommuterLink ATIS program is needed.

Summary of Growth Areas for Parking Management:

- Potential need of parking assessment / plan
- Park and Ride areas
- Marketing of transit and ride sharing

Highway-Rail Intersections

Highway-Rail intersections are a safety concern for UDOT. Problems include violations of gates and signal, gates in congested areas, maintenance of equipment, and trains parked on crossings. UDOT would like to improve dialog with the railroads with the overall objective of improving safety. One ITS technology mentioned at the workshops was video

surveillance at crossings. Other options include advance indicators to notify motorists of potentially long delays well in advance of the decision point.

Summary of Growth Areas for Highway-Rail Intersections:

- Video surveillance
- Advanced notification of crossing delays

2.2 Advanced Traveler Information Systems (ATIS)

2.2.1. ATIS – Existing

The UDOT Advanced Traveler Information Systems program area consists of the following four types of existing ITS deployments.

511 Telephone Traveler Information System

"511" is a nationally recognized travel information number. Utah was one of the five early adopter states and was the first to implement a voice-activated system. By dialing 511 from any telephone (1-866-511-UTAH from outside the state), travelers can access traffic, road conditions, public transit, and Lake Powell ferry schedule information.

Event Tracking System (ETS)

Continued deployment and awareness efforts are needed to mainstream the CommuterLink ETS program on a statewide basis. As usage grows, enhancements and program upgrades will be required.

CommuterLink TV

CommuterLink TV is a television station that is dedicated to traffic issues. Viewers are able to view traffic information during the morning and evening commute hours to better plan for their commute prior to leaving home.

Kiosks

Traveler information kiosks provide the public with an opportunity to go on-line via the CommuterLink website to have a real-time look at traffic by viewing snapshots of camera images or by viewing the speed flow map for congestion or potential impediments (e.g., incidents, construction, or inclement weather). A kiosk has been installed in the lobby of the Calvin Rampton Complex, with additional deployments planned in the Salt Lake City Hall, and the Salt Lake County Public Works facility on State Street and 2100 South. Future growth to other areas of the State is envisioned if public use and acceptance of the kiosks warrants such expansion.

2.2.2. ATIS – Growth Areas

The stakeholders identified the following growth areas within the UDOT Advanced Traveler Information Systems program area.

All Areas

UDOT is pleased with the initial implementation of all areas of the CommuterLink ATIS program (Website, 511, TV, Radio, ETS). Obstacles such as public awareness and level of detail provided exist for the future success of this traveler information system. The current process for on demand information revolves around calling the 511 number, receiving alerts, and going to the website for information. Enhancements to the current system could be in the area of evacuation and security information. Stakeholders would like to migrate traveler information towards data dictionaries for conformity on a national basis.

Summary of Growth Areas for all areas of ATIS:

- Increase public awareness
- Optimize level of detail
- Enhancement to include evacuation and security information
- Migrating towards data dictionaries and other standards

2.3 Commercial Vehicle Operations (CVO)

2.3.1. CVO – Existing

The UDOT Commercial Vehicle Operations program area consists of the following two types of existing ITS deployments.

CVISN Program

Commercial Vehicle Information Systems and Networks (CVISN) is a national program to enable government agencies, motor carrier industries, and other parties involved in CVO safety assurance and regulation to exchange safety information and conduct business electronically. The goal of CVISN is to improve safety and efficiency of CVO. Utah has completed its ITS/CVO business plan and top-level design and has an active CVISN program in place in conjunction with the FHWA Motor Carrier Utah Division Office. The State's CVISN working group is focused on implementing a regional Commercial Vehicle Information Exchange Window (CVIEW) system, which provides carrier and vehicle safety and credential information to fixed and mobile roadside inspection stations, state agencies, and other third party users. CVIEW will facilitate the uploading of Utah-based carriers information to the national Safety and Fitness Electronic Records (SAFER) system database. Presently, four of Utah's eight Ports of Entry are equipped with advanced Weigh-in-Motion (WIM), Automatic Vehicle Identification (AVI), and electronic screening equipment.

ITS/CVO Programs

ITS/CVO is the use of technology and systems to support commercial vehicle operations. Some ITS/CVO programs currently underway or being evaluated:

- Auto-Routing System
- Overweight Detection
- WIM
- Virtual Ports of Entry

- CVO Accident Reporting and Analysis
- Freight Mobility
- Hazardous Material Incident Response
- CVO Traveler Information

2.3.2. CVO – Growth Areas

The stakeholders identified the following growth areas within the UDOT Commercial Vehicle Operations program area.

Commercial Vehicle Initiatives

Stakeholders were able to list several problems they viewed as concerns for the commercial trucks on the transportation network. Accidents involving commercial vehicles block more lanes for a longer time period, and additional heavy-duty equipment is often necessary to clear these incidents. Unique weather and wind conditions can be difficult in Utah, and UDOT would like more information on inter- vs. intra-state commercial vehicle travel movements. Telematics and transponder issues are areas where the CVO/DOT communications could be improved.

Summary of Growth Areas for Commercial Vehicle / Intelligent Vehicle Initiatives:

- Law Enforcement / Policy / Coordination issues associated with CVO incidents
- Additional knowledge on inter- vs. intra-state CVO movement
- Telematics issues

2.4 Rural Deployments

2.4.1. Rural Deployments – Existing

The UDOT Rural Deployments program area consists of the following two types of existing ITS deployments.

Road Weather Information Systems (RWIS)

The RWIS program was started to aid maintenance crews in winter operation efforts. RWIS Environmental Sensing Stations (RWIS-ESS) are the field sensors that measure and predict meteorological conditions. UDOT currently has 35 RWIS-ESS units deployed throughout the State to measure and report site-specific meteorological conditions including wind speed and direction, air temperature, relative humidity, dew point temperature, precipitation occurrence, classification, rate, and pavement temperature road condition. These measurements are transmitted in real-time to maintenance station supervisors via microwave and dedicated communications so that they can alert and more efficiently manage their crews for anti-icing and de-icing efforts.

Highway Advisory Radio (HAR)

The HAR network is a series of low power AM radio transmitters strategically deployed to provide real-time incident information via audio broadcasts. HAR messages provide more detail than can be displayed on a VMS. Motorists traveling within specific geographic

regions can tune in for the latest conditions and information. When needed, signs within radio coverage areas will flash, indicating the motorist should tune to a specific frequency for important traffic information. This information is updated by the TOC to inform the traveling public about incidents that will affect their travel further along the highway. UDOT has currently deployed 10 permanent and portable HAR units in the northern part of the State to deliver time-critical or incident-related information to motorists traveling in rural and urban areas. These HAR units were effectively used during the Olympics to broadcast multi-modal, special event, and congestion-related information to motorists.

2.4.2. Rural Deployments – Growth Areas

The stakeholders identified the following growth areas within the UDOT Rural Deployments program area.

RWIS

RWIS designs will become more standardized, including NTCIP compliance. Concern over the reliability of RWIS information was voiced as well as issues with communications, pucks, and other instrumentation. Other areas for improved RWIS include automated treatment on bridges, fog warning systems, and better information available to the traveler. Trained meteorologists on staff could improve procedures, interpret forecast data, coordinate with other weather staff, and assist in the design of RWIS stations.

Summary of Growth Areas for RWIS:

- Improved RWIS technology and standards
- Meteorological expertise on staff
- Automated treatment systems
- Fog warning systems

HAR

Improved reliability and steps to thwart vandals has been identified as a need to be addressed prior to expanding in other areas. Activation of the flasher beacons are generally performed by pagers, but the commercial use of this wireless service is not generally available in many of the remote sites. In addition, mounting and ease of access to the HAR equipment has made these installations easy targets for theft of the solar panels and battery units.

Summary of Growth Areas for HAR:

- Improved reliability & communications
- Site security

2.5 Miscellaneous ITS Applications

2.5.1. Miscellaneous ITS Applications – Existing

Active deployment of new ITS applications is currently underway in all Regions of the State, with the largest growth occurring in Regions 1 and 3. Integration of all traffic signal systems is a priority item currently being designed that will essentially eliminate the need for stand-

alone closed-loop management systems by direct communication with the CommuterLink icons™ traffic control system. Communication links and conduit projects are also being deployed to establish a direct ATMS link to the Region headquarters in Ogden and Orem, with extensions to the cities of Orem and Provo. New CCTV, VMS, and TMS construction projects are in process in various locations including cameras at construction sites such as the Virgin River bridge reconstruction project in Region 4. Deployments have also included new VMS, CCTV, and an AVI-activated gate at Bryce Canyon National Park. A communication design report has also recently been submitted for comment that will revolutionize the method of interacting and transporting video and data between field sites and traffic and emergency management centers.

2.5.2. Miscellaneous Applications – Growth Areas

The stakeholders identified the following miscellaneous growth areas within the ITS Program.

Communication

A strategic growth area for continued ITS expansion includes the deployment of a statewide fiber and wireless communications network. This is critical because, regardless of the device or operating center, a communications network is the backbone that services all aspects of ITS from emergency to traffic management applications. Full-scale deployment of fiber optics on a statewide basis is unrealistic, especially within rural areas, yet communications to field devices, emergency management vehicles, roadside readers, and center-to-center sites is critical for the future success and integration of the ITS infrastructure and partnering with agencies on a statewide level. Additional focus is also required for converting existing dial-up devices and their associated long distance tariffs to communication methods that can provide higher bandwidths with lower monthly costs.

Summary of Growth Areas for Communications:

- Statewide wireless communication network
- Upgrade of existing communication methods that have long distance and/or usage tariffs associated with them

Safety

Several areas emerged for addressing safety concerns through the use of ITS. Areas where ITS may be applied include work zone applications, pedestrian issues, crashes, and security. Pedestrian applications include use of countdown signals, advanced warning signals, and updating signal head to LED. Cameras could be used to monitor work zone queues and warning devices for wrong-way vehicles or for anomaly conditions within secure areas. In addition, while not strictly an ITS technology, center lane rumble strips were also mentioned as a good safety application in work zones.

Summary of Growth Areas for Safety:

- Security monitoring of anomalies
- Pedestrian ITS applications

- Work zone ITS applications
- Safety ITS applications

Research

Several items of research were identified in three general areas: communications, traffic operations, and technologies. Expanding 511 would need additional focus groups and research on events, construction, and weather. Traffic operations research areas included lane control vs. VMS, travel time estimations, and accident statistics research on roundabouts vs. traffic signals. Research areas involving technologies would include weather information, the commercial vehicle industry, video detection of anomalies for security applications, and integration issues such as integrating avalanche systems into CommuterLink.

Summary of Growth Areas for Research:

- Research needs: communications, traffic operations, and technology

Automated Highways Systems

The future of Automated Highway Systems (AHS) and its relation to UDOT exist in two arenas: the roadway and the vehicle. The AHS will allow equipment to work "smarter". Snowplows and maintenance vehicles would be enhanced for better operation and human factors. The roadway infrastructure could provide additional information to cars equipped to interpret the signals. Initial steps for advancing the AHS are to address policy issues, legal issues, and social issues. Much work would need to occur with the auto industry. Additionally, research would need to occur on UDOT's infrastructure.

Summary of Growth Areas for Automated Highway Systems:

- Policy and legal issues associated with the AHS

3. PROPOSED ITS EXPANSION

This section describes some recommended ITS deployments for UDOT over the next 20 years on a region-by-region basis and depicts them on a series of regional maps; however, due to the extensive nature of a 20-year list, not all potential projects are illustrated. Rather, strategic deployment goals for each Region have been identified to assist users in identifying ITS components that should be considered in conjunction with new construction projects. Additionally, STIP projects through FY07 that might be able to incorporate ATMS devices are also identified in Appendix A. These STIP projects and associated ATMS components can also be viewed online at the following website:

http://168.178.120.60/website/ATMS_devices/viewer.htm

The recommendations are organized by the four statewide UDOT Regions as depicted in Exhibit 2, and by the TOC itself as a statewide operations center. For clarity, not all individual deployments (i.e., TMS, trailblazer, or traffic signal integrations) are depicted on the Region maps since these are too numerous to identify. These deployments have instead been identified by coverage area.

In addition, since this Plan cannot reasonably identify all potential projects, specific planning criteria have been developed to help define the 20-year ITS deployment goals. These criteria are depicted in Table 1 and can be used to identify the ITS components that might be appropriate for a particular location based on the physical characteristics or functional need of that location.

Many device deployments are a function of VMS installations, and are depicted on the associated maps as ATMS Clusters. These highly inter-related devices are purposely grouped together to increase overall effectiveness and synergy of use by sharing infrastructure (e.g., cabinets, utilities, communications equipment) and increasing functionality. For example, strategically located TMS or RWIS units can automatically activate congestion or weather related messages on a nearby VMS; cameras can verify that messages are correctly displayed; and sign messages can alert motorists to tune to HAR frequencies for special alerts. For this reason, these ATMS Clusters should typically consist of VMS, TMS, CCTV cameras, RWIS and HAR units.

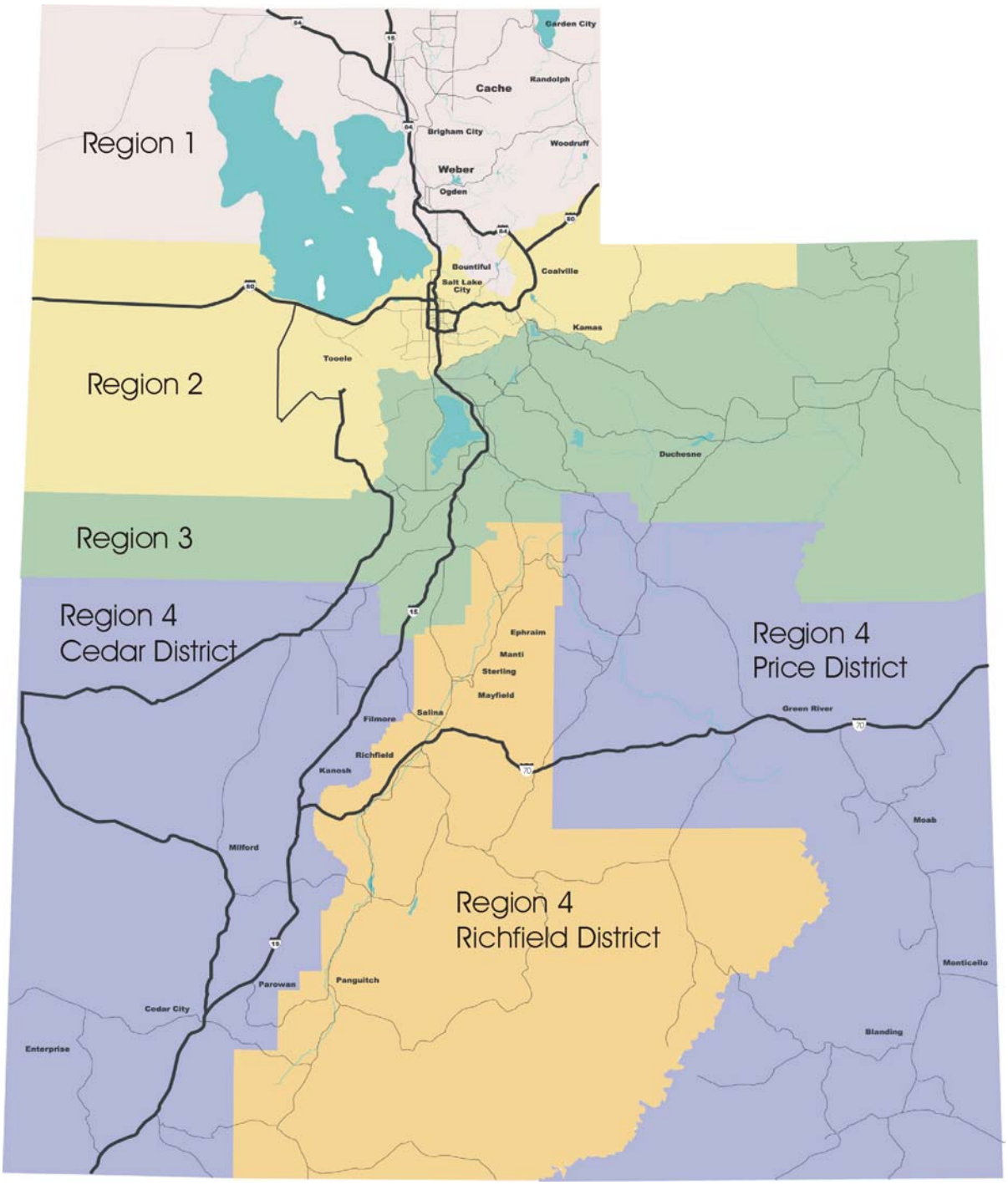

Exhibit 2: Statewide UDOT Region Map

Table 1: Planning Criteria for Defining the 20-Year ITS Deployment Goals

Device	Locating Criteria	Purpose
VMS	• At least 2 miles in advance of every freeway-to-freeway and freeway-to-major highway interchange (minimum spacing 5 miles typical) • Arterial trailblazer signs on major urban diversion routes, and in advance of freeway access points	Freeway diversions
	• All inbound freeway State border crossings	Traveler advisories
	• In advance of all Ports of Entry	Inspection requirements
	• Blank out signs at all: — Ramp meter on ramps — HAR sites — Special event / parking areas — Hazardous sites — Railroad crossings	Activated during: — Meter “on” conditions — Important message broadcasts — Required routing/diversion of traffic — Hazardous conditions such as ice, fog, etc.
HAR	• All sites where at least one freeway VMS is located, but no closer than 20 miles of another HAR unit	Clustered with freeway-to-freeway VMS to advise motorists of significant events. VMS can be used to advise motorists of special alert broadcasts.
CCTV	• All signalized intersections where average v/c ratios exceed 1.0 during peak hours	Monitor intersection operations
	• All rural freeway interchanges where arterial v/c averages exceed 0.9 during peak hour conditions and/or if arterial route is frequently used for special events. Camera to be positioned such that arterial traffic can be monitored ¼ miles in either direction • All urbanized interchanges	Monitor freeway / arterial conditions
	• All sites where VMS are located	Upstream of all VMS to provide a visual confirmation of sign message displays
	• Intermodal and transit facilities	Security

Device	Locating Criteria	Purpose
TMS	• All freeway mainline sites where ramp meters are installed	Support traffic responsive metering
	• Positioned at, and ½ mile upstream and downstream of all freeway-to-freeway VMS • All freeway interchanges where v/c ratios exceed 0.9 during peak hour conditions • All freeway rest areas	To monitor traffic flow conditions and/or to automatically activate congestion messages
Ramp Meter	• The preliminary warrant should consider mainline v/c, mainline speed, and/or accident rate	Help maintain freeway flows at or below capacity levels
	• Further analysis should be done if one of the following is true: — Mainline v/c > 0.8 for 2 lane hwy (for more than ½ an hour) — Mainline v/c> 0.85 for 3 or more lanes (for more than ½ an hour) — Mainline Speed < 50 mph (for more than ½ an hour) — Accident Rate (in merge or weaving section) > 10 mvm	If one of the criteria is met, then further analysis should determine the cause of the problem and if ramp metering is a feasible solution
	• Upstream on-ramps located within two miles or less of a metered site should also be metered	Technical reasons for ramp metering include (but are not limited to): — Break up entering platoon in a merge or weave section. This can possibly increase the bottleneck capacity (Cassidy) or reduce the number of accidents within the section — Relocate queue from freeway to on-ramps with the goal of reducing delay to motorists exiting before the bottleneck — Metering of nearby and adjacent upstream on-ramp(s) minimizes the concentrated use of these ingress points, which otherwise would simply cause the overcapacity bottleneck issue to migrate to a new location Social reasons for ramp metering include (but are not limited to): — Give priority treatment with higher LOS to mass transit and carpools (MUTCD)

Device	Locating Criteria	Purpose
		– To encourage drivers to use alternate routes or alter their schedules
RWIS	• All sites where at least one freeway-to-freeway VMS or ATMS cluster is located	Clustered with freeway-to-freeway VMS to support automatic posting of weather related messages
	• Minimum of one sensor every 50 miles along freeway segments that typically require snow plowing or de-icing chemicals during winter months	Support management and maintenance personnel with snow removal operations and scheduling
	• All mountain summits • Vicinity of all chain-up areas	Automatically update 511 road condition message updates
Traffic Signal Systems	• Integrate all coordinated signal systems onto State's central traffic control system	Provide for statewide viewing of all signal systems from any ATMS workstation
	• Traffic signals located within 0.5 miles of each other shall be interconnected	Interconnect and coordinate adjacent signals
Conduit / Comm.	• All State freeways • Between access road and all DOT facilities	Future use
Highway and Work Zone Safety	• Warning beacons • ATIS awareness • Device failure • Portable VMS • Portable HAR • Portable CCTV • ETS • Variable speed limit signs • Fog warning sensors	Remote monitoring and management of work zones through the use of ITS

3.1 CommuterLink TOC ITS Projects

SUMMARY OF 5 YEAR COMMUTERLINK TOC DEPLOYMENT GOALS
New Agency / System Interconnects: • Regions 1, 3 and 4 • Provo / Orem • Bryce / Zion National Park • Links to neighboring State control centers • Statewide deployment of *icons*™ to all traffic signal systems Hardware Enhancements: • Install IP-based infrastructure in TOC • Video wall projector enhancement • Console workstation enhancements Software Enhancements: • Ramp meter system (NTCIP) • Video control system • VMS control system • CAD-ATMS integration / Incident management control system • Device management system • GIS map deployment / integration • AVL integration • ATIS enhancements (ETS, Website, 511)

Discussion

Located in Salt Lake City and often associated with Region 2 because of its proximity and extent of deployed elements within this Region, the TOC is actually a statewide facility and is intended to serve and support all four UDOT Regions. Construction and initial device procurement of the TOC facility began in 1997, with most electronic and computer equipment installations occurring in early 1998. Therefore, while it seems that the CommuterLink System is new, the age of many of the electronics (e.g., the computer servers, video wall projectors, video matrix switch, and communication equipment) are actually over five years old, and based on a design that is close to 7 years old. In electronic years, this is a very long time, and coupled with the extremely heavy usage and harsh environment this equipment is subjected to, many of these devices are at or nearing the end of their useful life.

Replacement parts are beginning to become difficult to obtain, and in some cases the equipment is so obsolete the vendors have announced that they will no longer be providing support for them. Future deployment plans for the TOC therefore needs to consider the upgrade and replacement of these electronic components before they degrade or fall into disrepair. The continual maintenance and upgrade of the TOC is critical for all Region deployments.

TOC and the ITS Division deployment programs are generally geared towards the enhancement and development of new software and infrastructure improvements that will benefit the entire CommuterLink community. Projects envisioned over the next few years include deployment of the first NTCIP ramp metering software, enhancement of the Event Tracking System (ETS) application, enhancement of traveler information systems such as 511 and the website, maintenance of the communication infrastructure and servers, enhancements to the operating system to facilitate remote access to the ATMS devices, and deployment and maintenance of an ATMS device configuration maintenance application to facilitate maintenance management by the field technicians.

3.2 Region 1 ITS Projects

SUMMARY OF 5-YEAR REGION 1 DEPLOYMENT GOALS
New Agency / System Interconnects: • Region 1 and TOC interconnect • Links to local EMS dispatch centers • Links to local municipalities in Ogden and surrounding areas • Links to POEs • Integrate existing *icons*™ server with TOC, and expand coverage to other municipalities Communication Enhancements: • Fiber interconnect along I-15 from Farmington to North Ogden • Fiber interconnect along US 89 from Farmington to US 84 • Fiber interconnect along US 84 from US 89 to I-15 CommuterLink Enhancements: • Establish local TCC facility in Region headquarters • Integrate and expand CCTV & TMS coverage along freeway and local arterials • Expand RWIS and HAR coverage in rural areas

Discussion

Region 1 encompasses the geographical area north of Davis County to the Idaho border. The following counties are included in this Region: Box Elder, Weber, Morgan, Rich, and Cache.

An important element in any ITS Program is the communications infrastructure, and an emphasis on the installation of a backbone communication network within the urban areas of this Region will be emphasized. The CommuterLink fiber optic communications infrastructure on I-15 will be extended from Farmington towards Farr West, with a goal of developing a redundant path along US 89 parallel to I-15. The communications will create a ring with the addition of a segment along I-84, between I-15 and US 89. All three segments will be populated with various ATMS devices, including VMS, CCTV, TMS, RMS, and RWIS. The infrastructure will be tied into the Region 1 facility and will integrate all existing ATMS devices.

ATMS device expansion will continue in the easterly direction, however, the fiber-based communications infrastructure may not immediately follow due to the rural nature of this area. Alternate communications methods may be required and could include wireless or leased services (i.e., wireless, DSL or frame relay circuits) as required.

ATIS in the form of the CommuterLink website, 511, and VMS will alert travelers of road conditions, especially at the Idaho border and in Logan, Weber, and Sardine Canyons where weather plays an important factor in safe travel. HAR will complement the signs at these locations.

There will also be expansion of the current ATMS System in various cities, tying them into the communications system. ATMS enhancements include integration of traffic signals onto the TOC *icons*™ traffic control system, upgrading signal controllers, and developing new signal timing plans. Project expansion will build upon the current work already performed by the Region 1 engineering staff such as the Roy, Layton, and Logan signal interconnect construction projects.

The 511 information available from the Ports of Entry (POE), as well as VMS installed at the Brigham City POE, should enhance the commercial vehicle operations at this location. Installation of electronic seal and license plate readers are also planned for the Perry POE.

Exhibits 3 and 4 show a graphical system illustration of the ITS deployment plans for Region 1. Appendix A lists relevant STIP projects for Region 1 that could be used to facilitate deployment of these future ITS project goals.

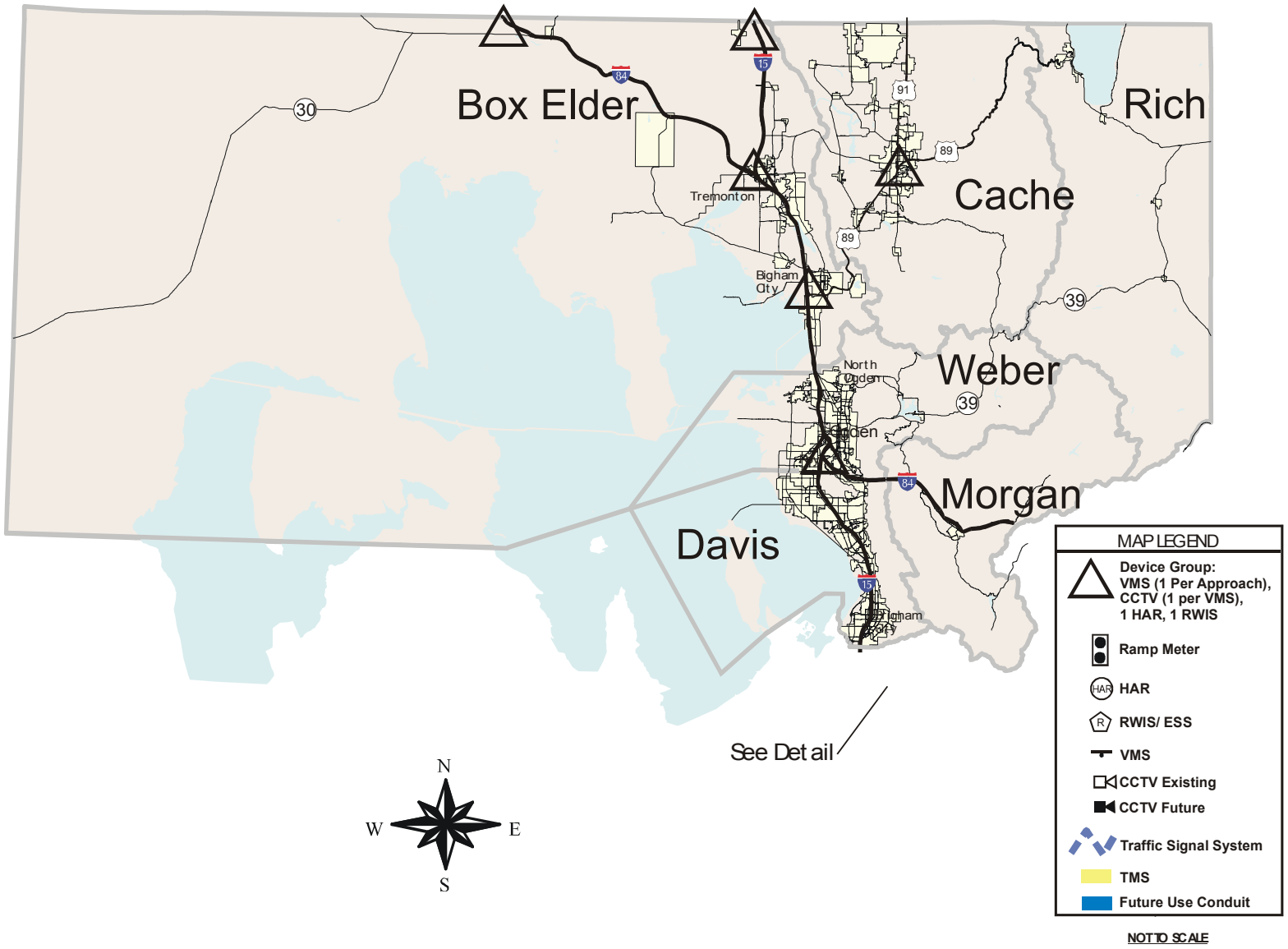

Exhibit 3: Region 1 ITS Projects

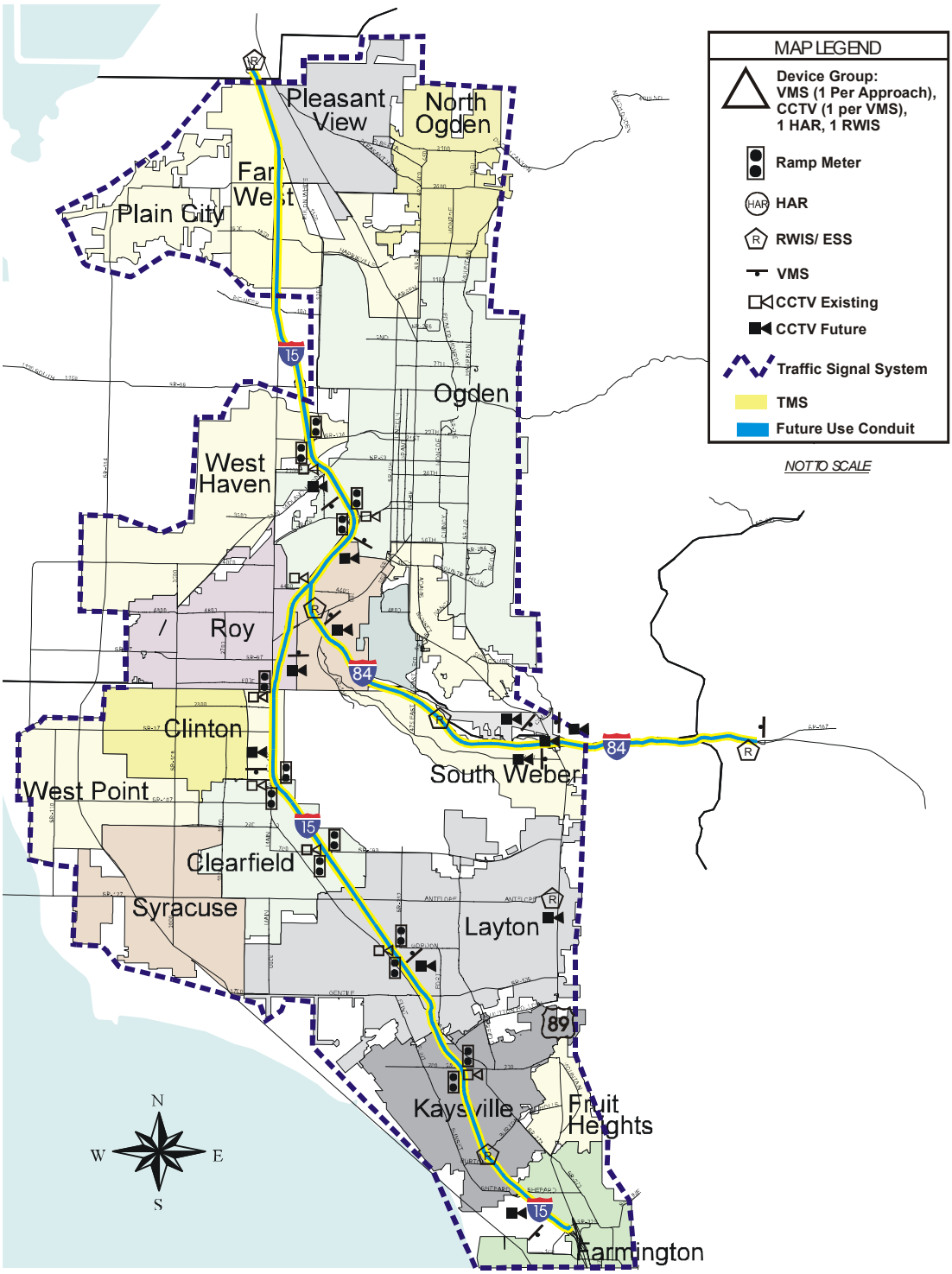

Exhibit 4: Ogden Urban Area ITS Projects

3.3 Region 2 ITS Projects

SUMMARY OF 5-YEAR REGION 2 DEPLOYMENT GOALS
Communication Enhancements: • Phase I - Install IP infrastructure in Hub buildings • Phase II - Expand IP to field cabinets Construction of additional ATMS devices: • Fiber / Conduit expansion to Tooele and into Park City • Expansion of ATMS field devices • Interconnect remaining traffic signals within urban area

Discussion

Region 2 includes Salt Lake City and serves the following counties: Tooele, Davis, Salt Lake, and Summit. Of all four UDOT Regions, Region 2 has the most developed ATMS System.

Although an ATMS network has been established in the Salt Lake Valley, expansion will continue in the East-West direction into Summit and Tooele counties. Furthermore, despite the seemingly recent deployment of the CommuterLink System in this Region, many of the systems deployed (e.g., the computer servers, video wall projectors, video matrix switch, and communication equipment) have been in place for more than five years. In electronic terms, this is a long time, and coupled with the extremely heavy usage and harsh environment that they are subject to, many of these devices are at or nearing their the end of their useful life. Future deployment plans for Region 2 need to consider the upgrade and replacement of these units before they fail. The deployment of ITS devices in the rural areas will continue to include RWIS, VMS, CCTV, and HARs at congested, special needs (e.g., weather, high-accident prone), or route decision making sites.

Appendix A lists relevant STIP projects for Region 2 that could be used to facilitate deployment of these future ITS projects. Exhibits 5 and 6 illustrate the locations of these projects.

3.4 Region 3 ITS Projects

SUMMARY OF 5-YEAR REGION 3 DEPLOYMENT GOALS
New Agency / System Interconnects: • Expand fiber backbone from TOC to Region 3 headquarters & establish local TCC facility • Establish links to local municipalities (especially Orem and Provo control centers) • Establish links to local EMS dispatch centers • Install *icons*™ server and migrate control of local signals to this platform Communication Enhancements: • Fiber interconnect along I-15 from point of the mountain to SR6 Construction of additional ATMS devices • Integrate and expand CCTV & TMS coverage along freeway and local arterials • Expand RWIS and HAR coverage in rural areas

Discussion

Region 3 covers a thin section across the middle of the State from California to Colorado and serves the following counties: Juab, Utah, Wasatch, Duchesne, and Uintah.

The ATMS expansion from Region 2 will continue in the southerly direction along I-15 making expansion in Region 3 affordable and integrated with the existing ATMS network. The ATMS fiber optic communications network will be extended towards the south from Hub 12 at the Point of the Mountain to SR6 in Spanish Fork. This infrastructure will also tie into the Region 3 headquarters in Orem City. Integration with Utah County municipalities will be achieved through integration with existing locally owned fiber optic networks, with interconnecting gaps being filled in through small construction projects.

Devices such as VMS, CCTV, TMS will be deployed along I-15 from Hub 12 to SR6 and will spread east and west to support deployments in Orem City, Springville, Pleasant Grove, Lindon, Provo, and Lehi. Integration of state and municipal signals in the Orem/Provo urban area is viewed as a major priority item to be completed.

The deployment of ITS devices in the rural areas will continue to include RWIS, VMS, CCTV, and HARs at congested, special needs (e.g., weather, high-accident prone), or route decision making sites. Appendix A lists relevant STIP projects for Region 3 that could be used to facilitate deployment of these future ITS projects. Exhibits 6 and 7 illustrate the locations of these projects.

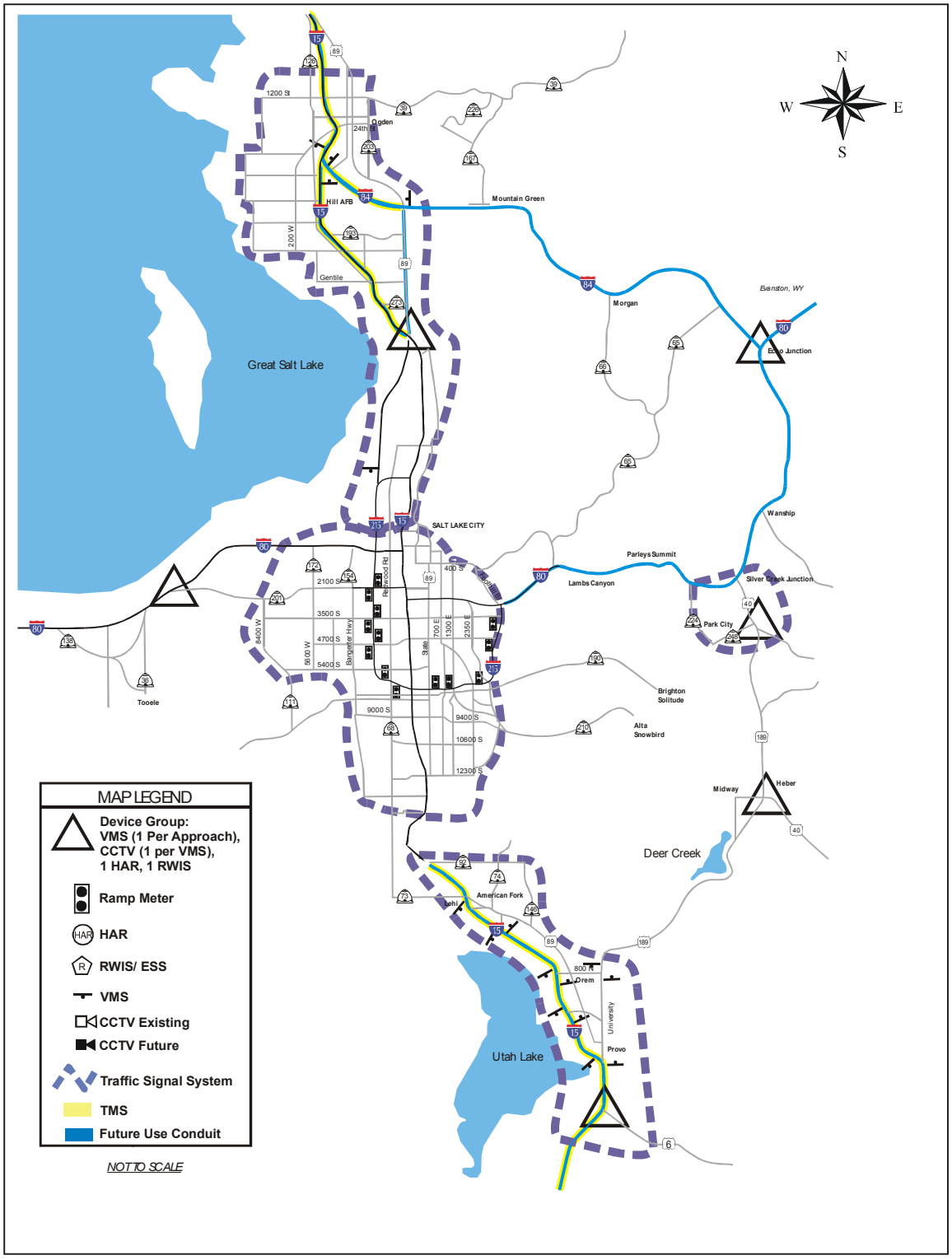

Exhibit 5: Wasatch Front ITS Projects

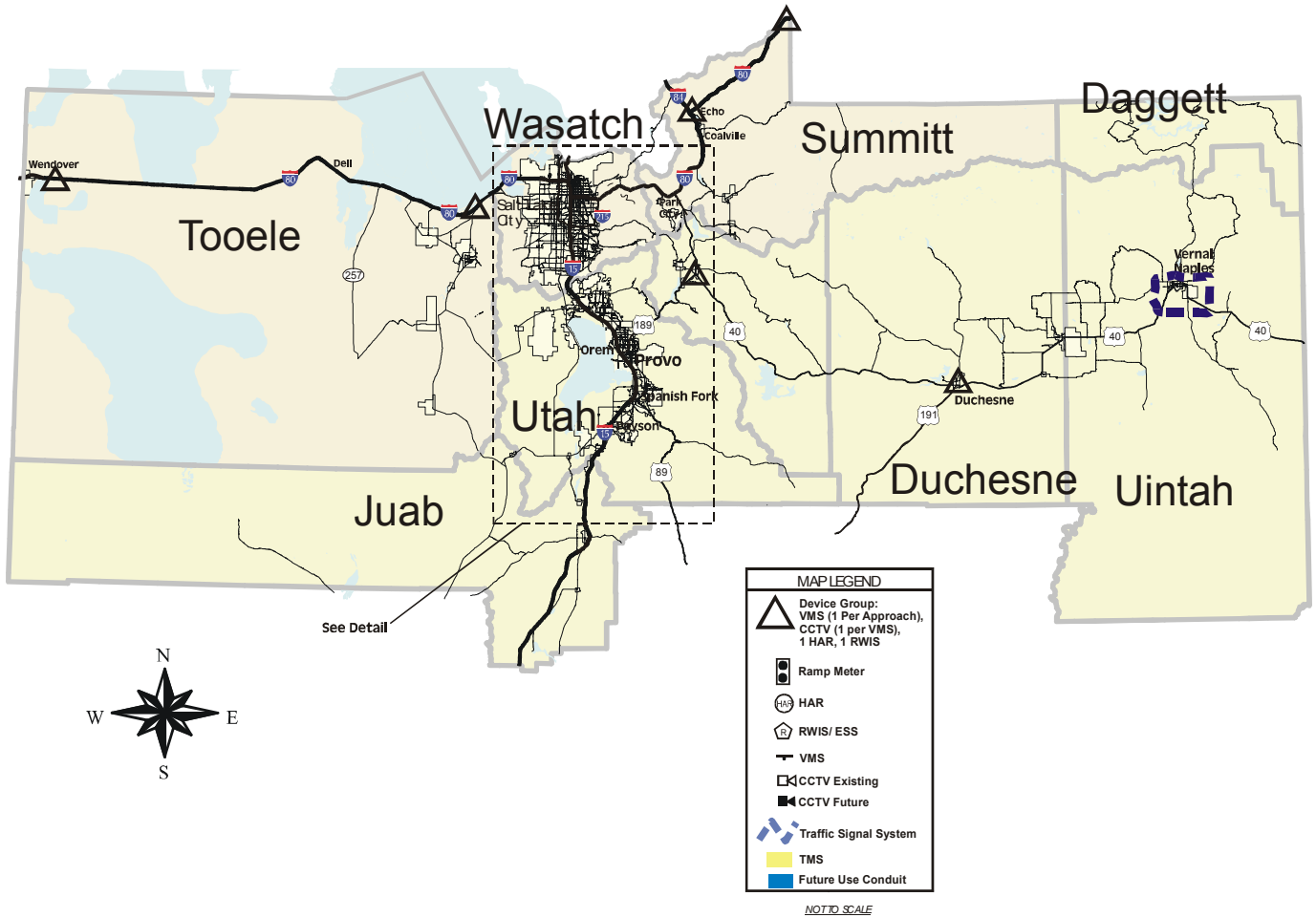

Exhibit 6: Regions 2 and 3 ITS Projects

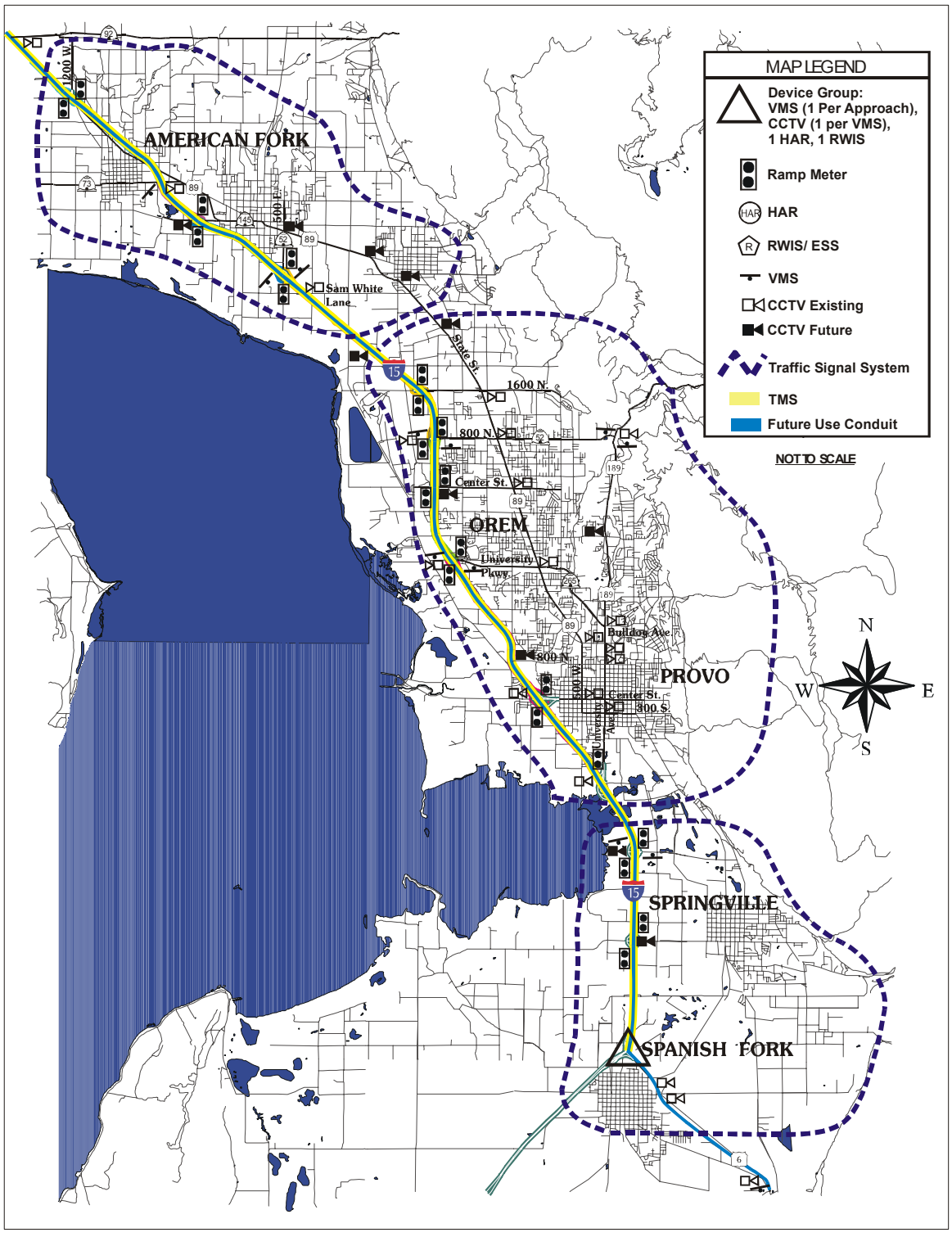

Exhibit 7: Region 3 ITS Projects

3.5 Region 4 ITS Projects

SUMMARY OF 5-YEAR REGION 4 DEPLOYMENT GOALS
Communication Enhancements: • Extension of communication infrastructure to accommodate rural and sporadic field deployments • Improving communications and coordination with local DPS dispatch centers CommuterLink Enhancements: • Establish local TCC facility in Region headquarters • Deploy new RWIS at critical weather locations • Install *icons*™ server and migrate control of local signals to this platform • Deploying VMS and/or HAR devices in advance of major decision making sites • Expand ATIS role with National Parks • Expand CVO monitoring

Discussion

Region 4 is UDOT's southern-most division and encompasses the largest geographical area. This area is also the most rural area of the State and includes numerous State and National Parks that serve thousands of visitors annually. Divided into 3 districts, the following counties are served by Region 4: Millard, Beaver, Iron, Washington, Sampete, Sevier, Piute, Garfield, Kane, Carbon, Emery, Grand, Wayne, and San Juan.

The major challenge will be to establish a communications network throughout this vast geography. The deployment need for ITS devices in the rural areas will continue to include RWIS, VMS, CCTV, and HARs at congested, special needs (e.g., weather, high-accident prone), or route decision making sites.

Appendix A lists relevant STIP projects for Region 4 that could be used to facilitate deployment of these future ITS projects. Exhibit 8 illustrates the locations of these projects. Most of the devices deployed along I-15 in this Region, lie between the Utah-Arizona border and the interchange with I-70. Also, device expansion along I-70 from I-15, towards the Colorado border, will commence.

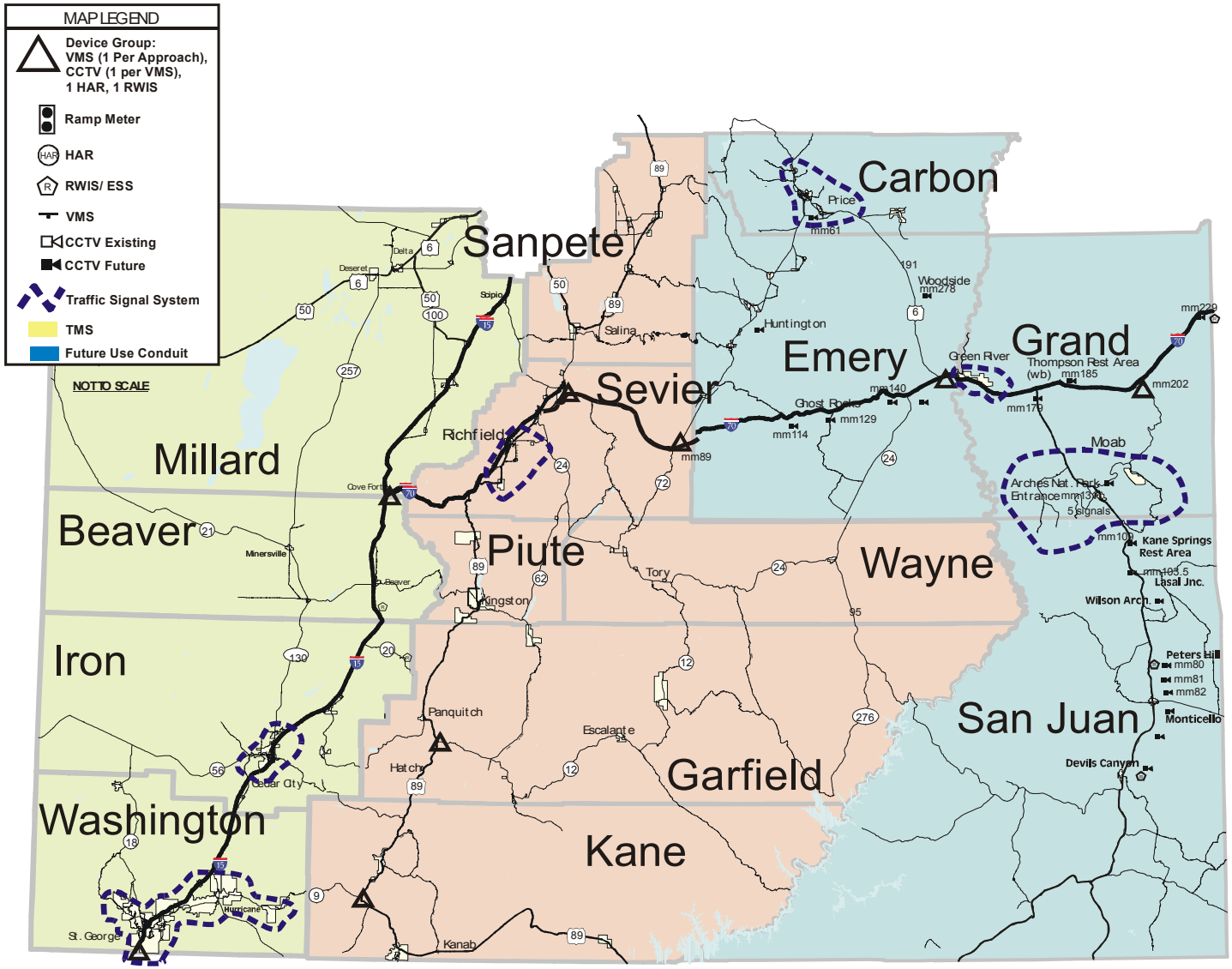

Exhibit 8: Region 4

APPENDIX A – STIP DEPLOYMENT PROJECTS

MEMORANDUM:

Date: March 27, 2003

To: Kevin Nichol, Engineering Manager

From: Monte Yeager, Aeronautical Planner

Re: Five-Year Airport Capital Improvement Program
F & E Projects

Five-Year Airport Capital Improvement Program (CIP)
Inclosed is the Five-Year Airport Capital Improvement Program (CIP). All federal airport projects are funded by the Airport Improvement Program (AIP), through the Aviation Trust Fund.

Note 1: Projects at the Salt Lake City International Airport are not shown. Please contact Steve Domino, Director of Planning, at 575-2980.

F & E Projects
In addition to the AIP, the Facilities and Equipment (F&E) Program is funded by the Federal Aviation Administration (FAA) through the Aviation Trust Fund. F&E is the FAA's branch that funds air traffic control facilities and equipment. The following three projects will be funded through F&E:

- Provo Tower: $800,000 has presently been appropriated by congress. Total cost will be approximately $2,200,000. Provo City is responsible for the remaining $1,400,000, however, the Utah Division of Aeronautics may commit $500,000 ($250,000/year for two years) to the project. This project is 1-2 years away.

- Utah Valley Radar: Utah Valley south and east of the Point of the Mountain, and below 8,000 feet MSL (mean sea level) or approximately 3,500 feet AGL (above ground level), is not covered by radar, consequently, a black hole exists where aircraft are not seen by air traffic controllers. This project is 5-10 years away.

- Logan ILS: An Instrument Landing System (ILS) at the Logan/Cache Airport is needed to assist pilots during conditions of poor weather conditions. The cost of the ILS will be approximately $2,000,000. This project is 2-3 years away.

Project Listing

P, Commission Approved ACIP, Selected in SCIP, Commission Approved SCIP, ACIP Under Grant, SCIP Under Grant Projects and Ye

	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Beaver Municipal																
Crack Seal and Seal Coat with Rejuvenator Sealant, and paint	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$38,250.00	$4,250.00	$0.00	$42,500.00	47.60	48.55
Install Weather Reporting Equipment (AWOS III) Pavement Maintenance	2E+03	2002	ACIP Under Grant	$152,551.00	$0.00	$0.00	$152,551.00	$0.00	$0.00	$0.00	$7,599.00	$7,599.00	$0.00	$167,749.00	42.00	42.84
Install RW 13/31 REILS; Rehab. RW 13/31 lighting	2E+03	2003	ACIP Under Grant	$197,000.00	$57,000.00	$0.00	$140,000.00	$0.00	$0.00	$0.00	$9,813.00	$9,813.00	$0.00	$216,626.00	45.00	45.90
Crack Seal & Seal Coat	2E+03	2004	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$36,000.00	$4,000.00	$0.00	$40,000.00	47.60	48.55
General Aviation Entitlement Project		2004	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
General Aviation Entitlement Project		2005	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
General Aviation Entitlement Project		2006	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
General Aviation Entitlement Project	2E+03	2007	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	43.40	45.57
Crack Seal & Seal Coat		2007	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$36,000.00	$4,000.00	$0.00	$40,000.00	0.00	0.00
			Sub Total: Beaver Municipal	$949,551.00	$657,000.00	$0.00	$292,551.00	$0.00	$0.00	$0.00	$157,550.00	$59,550.00	$0.00	$1,166,651.00		
Blanding Municipal																
Rehabilitate Runway 17/35 Lighting,Update ALP (Airport Layout Plan)	2E+03	2002	ACIP Under Grant	$236,444.00	$0.00	$0.00	$236,444.00	$0.00	$0.00	$0.00	$11,778.00	$11,778.00	$0.00	$260,000.00	79.20	83.36
Enlarge Bypass Taxiways (Teacup Turnarounds) on both ends of Runway 17/35, Geological Study & Apron Repair. Card scan fueling system. Relocate Unicom radio.	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$231,300.00	$25,700.00	$0.00	$257,000.00	49.00	51.57
Crack Seal, Seal Coat & Remark Asphalt	2E+03	2004	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$72,000.00	$8,000.00	$0.00	$80,000.00	49.35	51.94
Land Acquisition for Parallel Taxiway to Runway End 17 and to Runway End 35	2E+03	2004	Selected in ACIP	$100,000.00	$100,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4,981.00	$4,981.00	$0.00	$109,962.00	42.00	44.20
GPS Istrument Landing System	2E+03	2005	Selected in ACIP	$10,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$10,000.00	38.10	40.10
Expand Apron - Install Helipad	2E+03	2005	Selected in ACIP	$261,907.20	$0.00	$0.00	$261,907.20	$0.00	$0.00	$0.00	$13,046.40	$13,046.40	$0.00	$288,000.00	0.00	0.00
Crack Seal, Seal Coat & Remark Asphalt Surfaces	2E+03	2006	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$72,000.00	$8,000.00	$0.00	$80,000.00	49.35	51.94
Apron Expansion & Relocate Wind Cone & Segmented Circle	2E+03	2006	Selected in ACIP	$836,648.00	$150,000.00	$0.00	$686,648.00	$0.00	$0.00	$0.00	$41,676.00	$41,676.00	$0.00	$920,000.00	43.75	46.05
Construct Partial Parallel Taxiway & Lighting to Runway End 17	2E+03	2007	Selected in ACIP	$778,446.00	$150,000.00	$0.00	$628,446.00	$0.00	$0.00	$0.00	$38,777.00	$38,777.00	$0.00	$856,000.00	0.00	0.00

Project Listing

P, Commission Approved ACIP, Selected in SCIP, Commission Approved SCIP, ACIP Under Grant, SCIP Under Grant Projects and Ye

	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Blanding Municipal																
Sub Total: Blanding Municipal				$2,223,445.20	$400,000.00	$0.00	$1,813,445.20	$0.00	$0.00	$0.00	$485,558.40	$151,958.40	$0.00	$2,860,962.00		
Bluff Airport																
Crack Seal, Seal Coat & Paint; Fencing Around Airport	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$98,298.00	$10,922.00	$0.00	$109,220.00	47.60	0.00
Crack Seal, Seal Coat and Paint. New Wind Cone.	2E+03	2005	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$45,000.00	$5,000.00	$0.00	$50,000.00	0.00	0.00
Crack Seal, Seal Coat and Paint	2E+03	2007	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$27,000.00	$3,000.00	$0.00	$30,000.00	0.00	0.00
Sub Total: Bluff Airport				$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$170,298.00	$18,922.00	$0.00	$189,220.00		
Brigham City Municipal Airport																
Crack Seal, Seal Coat & Paint Runway 16/34, Taxiway and Aprons	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$90,560.80	$22,640.20	$0.00	$113,201.00	52.85	52.19
Improve Runway 16/34 Safety Area, (2001 General Aviation Entitlement Project.)	2E+03	2002	ACIP Under Grant	$1,406,369.00	$1,406,369.00	$0.00	$0.00	$0.00	$0.00	$0.00	$69,924.00	$69,924.00	$0.00	$1,546,217.00	96.50	95.29
Land Acquisition	2E+03	2002	ACIP Under Grant	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$14,944.00	$0.00	$164,944.00	96.50	01.08
Wetland Mitigation	2E+03	2003	Commission Approved ACIP	$1,170,000.00	$420,000.00	$0.00	$750,000.00	$0.00	$0.00	$0.00	$52,303.00	$67,248.00	$0.00	$1,289,551.00	60.80	61.86
Install Perimeter Fencing	2E+03	2003	Commission Approved ACIP	$30,000.00	$30,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,494.00	$1,495.00	$0.00	$32,989.00	85.50	87.00
Construct Taxilane Expansion & Apron area	2E+03	2003	Commission Approved SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$141,210.00	$15,690.00	$0.00	$156,900.00	47.25	46.66
Improve Runway 16/34 Safety Area	2E+03	2004	Commission Approved ACIP	$5,600,000.00	$0.00	$5,000,000.00	$600,000.00	$0.00	$0.00	$0.00	$278,953.00	$278,953.00	$0.00	$6,157,906.00	96.50	95.29
Update Airport Layout Plan	2E+03	2005	Selected in ACIP	$55,000.00	$0.00	$0.00	$55,000.00	$0.00	$0.00	$0.00	$2,740.00	$2,740.00	$0.00	$60,480.00	68.00	69.19
Extend Runway 16/34	2E+03	2005	Selected in ACIP	$5,000,000.00	$0.00	$4,000,000.00	$1,000,000.00	$0.00	$0.00	$0.00	$249,065.00	$249,065.00	$0.00	$5,498,130.00	0.00	0.00
Construct Partial Parallel Taxiway & Taxiway Lighting	2E+03	2006	Selected in ACIP	$2,000,000.00	$0.00	$1,000,000.00	$1,000,000.00	$0.00	$0.00	$0.00	$99,626.00	$99,626.00	$0.00	$2,199,252.00	60.90	60.14
Remove Obstructions (Terminal Area)	2E+03	2007	Selected in ACIP	$455,000.00	$0.00	$0.00	$455,000.00	$0.00	$0.00	$0.00	$22,665.00	$22,665.00	$0.00	$500,330.00	95.00	96.66
Sub Total: Brigham City Municipal Airport				$15,866,369.00	$2,006,369.00	$10,000,000.00	$3,860,000.00	$0.00	$0.00	$0.00	$1,008,540.80	$844,990.20	$0.00	$17,719,900.00		

Project Listing

P, Commission Approved ACIP, Selected in SCIP, Commission Approved SCIP, ACIP Under Grant, SCIP Under Grant Projects and Ye

	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Bryce Canyon																
Design Parallel Taxiway System & Update Airport Layout Plan	2E+03	2002	ACIP Under Grant	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$14,944.00	$0.00	$164,944.00	55.65	64.41
Acquire Snow Removal Equipment & Rehabilitate Runway	2E+03	2002	ACIP Under Grant	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	43.80	49.38
Crack Seal & Seal Coat and Paint Taxiway and Apron	2E+03	2003	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$40,000.00	$10,000.00	$0.00	$50,000.00	47.60	52.24
Expand GA Apron.	2E+03	2003	Commission Approved SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$288,000.00	$32,000.00	$0.00	$320,000.00	42.00	46.10
Construct Partial Parallel Taxiway to Runway 21	2E+03	2003	Commission Approved ACIP	$700,000.00	$150,000.00	$0.00	$550,000.00	$0.00	$0.00	$0.00	$34,869.00	$34,869.00	$0.00	$769,738.00	55.65	61.08
Environmental Assessment (EA) for Runway Widening (100'x7395). Upgrade Safety Area to C-II.	2E+03	2005	Commission Approved ACIP	$90,940.00	$90,940.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4,530.00	$4,530.00	$0.00	$100,000.00	62.00	68.05
Widen Runway to 100' X 7395' to C-II.	2E+03	2006	Selected in ACIP	$1,646,014.00	$359,060.00	$0.00	$1,286,954.00	$0.00	$0.00	$0.00	$81,993.00	$81,993.00	$0.00	$1,810,000.00	0.00	0.00
Move Runway Lights	2E+03	2007	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
			Sub Total: Bryce Canyon	$2,886,954.00	$1,050,000.00	$0.00	$1,836,954.00	$0.00	$0.00	$0.00	$464,336.00	$193,280.00	$0.00	$3,544,570.00		
Cedar City Regional																
Archetictual Services for New Terminal Building, Purchase Crew Stairs for Emergency Response and rotating Beacon.	2E+03	2002	Selected in ACIP	$1,000,000.00	$0.00	$0.00	$0.00	$1,000,000.00	$0.00	$0.00	$0.00	$99,626.00	$0.00	$1,099,626.00	0.00	0.00
Seal Coat & Repaint Markings for Runway 2/20	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$76,500.00	$8,500.00	$0.00	$85,000.00	49.35	57.00
Construct Terminal Building, Auto Parking, Access Road, & Fencing	2E+03	2004	Selected in ACIP	$2,000,000.00	$0.00	$0.00	$0.00	$2,000,000.00	$0.00	$0.00	$0.00	$199,252.23	$0.00	$2,199,252.23	45.15	54.86
Crack Seal, Seal Coat & Paint All Asphalt Surfaces Except RW 2/20.	2E+03	2004	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$67,500.00	$7,500.00	$0.00	$75,000.00	0.00	0.00
Prepare Environmental Assessment for Runway 2/20 Extension (1,349')	2E+03	2006	Selected in ACIP	$59,111.00	$0.00	$0.00	$0.00	$59,111.00	$0.00	$0.00	$5,889.00	$0.00	$0.00	$65,000.00	0.00	0.00
Crack Seal, Seal Coat & Paint All Asphalt Pavement Except RW 2/20.	2E+03	2007	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$67,500.00	$7,500.00	$0.00	$75,000.00	49.35	57.00
Phase I, Extend Runway 1,349' to North (Grading & Drainage)	2E+03	2007	Selected in ACIP	$22,735.00	$0.00	$0.00	$22,735.00	$0.00	$0.00	$0.00	$0.00	$2,265.00	$0.00	$25,000.00	21.00	25.52
			Sub Total: Cedar City Regional	$3,081,846.00	$0.00	$0.00	$22,735.00	$3,059,111.00	$0.00	$0.00	$217,389.00	$324,643.23	$0.00	$3,623,878.23		

Project Listing

P, Commission Approved ACIP, Selected in SCIP, Commission Approved SCIP, ACIP Under Grant, SCIP Under Grant Projects and Ye

	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Delta Municipal																
Relocate Runway Threshold, Update ALP, Install Position Signs, Install PAPI, Rehabilitate All Pavement, Repaint Markings (2001& 2002 General Aviation Entitlement Project)	2E+03	2002	ACIP Under Grant	$300,000.00	$300,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$22,416.00	$0.00	$329,888.00	89.00	89.00
Rehabilitate Runway 12/30 & Taxiway (Maintenance), Update ALP (Airport Layout Plan)	2E+03	2002	Commission Approved SCIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,471.96	$7,471.96	$0.00	$164,943.92	47.60	47.60
Rehab. Runway 16/34 Lighting	2E+03	2003	Commission Approved ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	65.60	65.60
Crack Seal, Seal Coat & Paint All Asphalt Surfaces	2E+03	2005	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$72,000.00	$8,000.00	$0.00	$80,000.00	0.00	0.00
Reconstruct Apron	2E+03	2006	Selected in ACIP	$500,000.00	$450,000.00	$0.00	$50,000.00	$0.00	$0.00	$0.00	$24,906.00	$24,906.00	$0.00	$549,812.00	0.00	0.00
			Sub Total: Delta Municipal	$1,100,000.00	$1,050,000.00	$0.00	$50,000.00	$0.00	$0.00	$0.00	$119,321.96	$70,265.96	$0.00	$1,289,587.92		
Duchesne Municipal																
Crack Seal & Seal Coat, Paint	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$34,000.00	$6,000.00	$0.00	$40,000.00	47.60	45.46
Install AWOS & PAPI	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$166,500.00	$18,500.00	$0.00	$185,000.00	42.00	40.11
Land Acquisition for Runway Extension & RPZ. Rehabilitate Beacon. Relocate Perimeter Fence.	2E+03	2003	Commission Approved ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
Environmental Assessment for Runway 17/35 Extension	2E+03	2004	Selected in ACIP	$68,200.00	$68,200.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3,400.00	$3,400.00	$0.00	$75,000.00	62.00	61.07
Phase I, Pulverize and Grade Existing Apron & Runway 17/35 to 75' Wide. Grade Turnarounds at Both Runway Ends. Remove Existing Buildings, Relocate Runway Lighting & Visual Aids.	2E+03	2006	Selected in ACIP	$1,281,350.00	$300,000.00	$0.00	$981,350.00	$0.00	$0.00	$0.00	$63,825.00	$63,825.00	$0.00	$1,409,000.00	40.50	38.68
Phase II, Pave Apron, Runway 17/35 & Tea-Cup Turnarounds.	2E+03	2007	Selected in ACIP	$1,000,000.00	$150,000.00	$0.00	$850,000.00	$0.00	$0.00	$0.00	$49,813.00	$49,813.00	$0.00	$1,099,626.00	0.00	0.00
			Sub Total: Duchesne Municipal	$2,499,550.00	$668,200.00	$0.00	$1,831,350.00	$0.00	$0.00	$0.00	$325,010.00	$149,010.00	$0.00	$2,973,570.00		
Dutch John																
Seal Coat & Paint, ALP, NPIAS & CIP Project Report	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$52,105.00	$5,600.00	$0.00	$57,705.00	47.60	41.53
Seal Coat & Paint	2E+03	2005	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$36,000.00	$4,000.00	$0.00	$40,000.00	0.00	0.00
Reconstruct Runway (Phase I)	2E+03	2007	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$450,000.00	$50,000.00	$0.00	$500,000.00	0.00	0.00

Project Listing

P, Commission Approved ACIP, Selected in SCIP, Commission Approved SCIP, ACIP Under Grant, SCIP Under Grant Projects and Ye

	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Dutch John																
			Sub Total: Dutch John	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$538,105.00	$59,600.00	$0.00	$597,705.00		
Escalante Municipal																
Crack Seal, Seal Coat, Paint	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$36,000.00	$4,000.00	$0.00	$40,000.00	47.60	42.25
Reconstruct and Reconfigure Apron	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$180,000.00	$20,000.00	$0.00	$200,000.00	55.60	49.35
Super Unicom	2E+03	2004	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$36,000.00	$4,000.00	$0.00	$40,000.00	0.00	0.00
Prepare Airport Layout Plan	2E+03	2004	Selected in ACIP	$45,470.00	$45,470.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,265.00	$2,265.00	$0.00	$50,000.00	0.00	0.00
Land Acquisition	2E+03	2005	Selected in ACIP	$145,504.00	$145,504.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,248.00	$7,248.00	$0.00	$160,000.00	17.00	15.09
Reconstruct and Widen Runway and Taxiway. Grade Safety Area.	2E+03	2006	Selected in ACIP	$1,000,000.00	$250,000.00	$0.00	$750,000.00	$0.00	$0.00	$0.00	$49,813.00	$49,813.00	$0.00	$1,099,626.00	0.00	0.00
Replace Runway & Taxiway Lighting (MIRLs/MITL), Install Signs	2E+03	2007	Selected in ACIP	$197,000.00	$150,000.00	$0.00	$47,000.00	$0.00	$0.00	$0.00	$9,813.10	$9,813.10	$0.00	$216,626.20	45.00	39.94
PAPIs and REILs	2E+03	2007	Selected in ACIP	$90,940.00	$0.00	$0.00	$90,940.00	$0.00	$0.00	$0.00	$4,530.00	$4,530.00	$0.00	$100,000.00	0.00	0.00
Electic Wildlife Fencing	2E+03	2007	Selected in ACIP	$150,960.40	$0.00	$0.00	$150,960.40	$0.00	$0.00	$0.00	$7,519.80	$7,519.80	$0.00	$166,000.00	0.00	0.00
			Sub Total: Escalante Municipal	$1,629,874.40	$590,974.00	$0.00	$1,038,900.40	$0.00	$0.00	$0.00	$333,188.90	$109,188.90	$0.00	$2,072,252.20		
Fillmore																
Crack Seal & Seal Coat; restriping of runway,taxiway, & airfield aprons	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$36,000.00	$4,000.00	$0.00	$40,000.00	47.60	42.60
Fence Perimeter	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$9,000.00	$1,000.00	$0.00	$10,000.00	38.40	34.37
Airport Layout Plan	2E+03	2004	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$36,000.00	$4,000.00	$0.00	$40,000.00	62.00	55.49
Crack Seal, Seal Coat & Paint	2E+03	2005	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$27,000.00	$3,000.00	$0.00	$30,000.00	0.00	0.00
			Sub Total: Fillmore	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$108,000.00	$12,000.00	$0.00	$120,000.00		
Green River Municipal																
Aircraft Apron Expansion for Helicpters.	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$180,000.00	$20,000.00	$0.00	$200,000.00	42.00	42.21
Construct Partial Parallel Taxiway to RW End 13, Install Perimeter Fencing (Phase II)	2E+03	2003	ACIP Under Grant	$264,178.00	$264,178.00	$0.00	$0.00	$0.00	$0.00	$0.00	$13,160.00	$13,160.00	$0.00	$290,498.00	55.65	57.60

Project Listing

P, Commission Approved ACIP, Selected in SCIP, Commission Approved SCIP, ACIP Under Grant, SCIP Under Grant Projects and Ye

	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Green River Municipal																
Update Signage	2E+03	2004	Selected in ACIP	$68,205.00	$68,205.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3,397.50	$3,397.50	$0.00	$75,000.00	79.65	80.05
Crack Seal, Seal Coat & Paint	2E+03	2004	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$45,000.00	$5,000.00	$0.00	$50,000.00	0.00	0.00
Partial Parallel Taxiway to RW End 31	2E+03	2006	Selected in ACIP	$636,580.00	$450,000.00	$0.00	$186,580.00	$0.00	$0.00	$0.00	$31,710.00	$31,710.00	$0.00	$700,000.00	55.65	55.93
Crack Seal, Seal Coat & Paint	2E+03	2007	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$45,000.00	$5,000.00	$0.00	$50,000.00	0.00	0.00
			Sub Total: Green River Municipal	$968,963.00	$782,383.00	$0.00	$186,580.00	$0.00	$0.00	$0.00	$318,267.50	$78,267.50	$0.00	$1,365,498.00		
Halls Crossing - Cal Black Memorial																
(Entitlement) Upgrade Solar Panels to Meet 70% of Needed Power and Airport Master Plan	2E+03	2002	ACIP Under Grant	$125,907.00	$125,907.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4,721.00	$7,821.00	$0.00	$138,449.00	0.00	0.00
Update Airport Layout Plan	2E+03	2003	ACIP Under Grant	$94,788.00	$94,788.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4,721.00	$4,722.00	$0.00	$104,231.00	62.00	67.43
Crack Seal, Rejuvenator Seal Coat & Paint	2E+03	2004	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$49,500.00	$5,500.00	$0.00	$55,000.00	47.60	50.34
EA for Widening and Lengthening Runway and Taxiway by 1000'	2E+03	2005	Selected in ACIP	$45,470.00	$45,470.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,265.00	$2,265.00	$0.00	$50,000.00	0.00	0.00
Widen R/W to 75', T/W to 35' and Relocate R/W Lighting	2E+03	2006	Selected in ACIP	$545,640.00	$450,000.00	$0.00	$95,640.00	$0.00	$0.00	$0.00	$27,180.00	$27,180.00	$0.00	$600,000.00	0.00	0.00
Crack Seal, Rejuvenator Seal Coat & Paint	2E+03	2007	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$54,000.00	$6,000.00	$0.00	$60,000.00	0.00	0.00
			Sub Total: Halls Crossing - Cal Black Memorial	$811,805.00	$716,165.00	$0.00	$95,640.00	$0.00	$0.00	$0.00	$142,387.00	$53,488.00	$0.00	$1,007,680.00		
Hanksville																
Crack Seal All Asphalt Surfaces	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$17,489.00	$0.00	$0.00	$17,489.00	47.60	0.00
Double Course Chip Seal on Runway, Taxiway and Apron	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$100,000.00	$0.00	$0.00	$100,000.00	55.60	0.00
Prepare Airport Layout Plan (ADP)	2E+03	2004	Selected in ACIP	$45,470.00	$45,470.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,265.00	$2,265.00	$0.00	$50,000.00	0.00	0.00
Install ASOS	2E+03	2005	Selected in ACIP	$72,752.00	$72,752.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3,624.00	$3,624.00	$0.00	$80,000.00	0.00	0.00
General Aviation Entitlement Project	2E+03	2006	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
General Aviation Entitlement Project	2E+03	2007	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
			Sub Total: Hanksville	$418,222.00	$418,222.00	$0.00	$0.00	$0.00	$0.00	$0.00	$138,322.00	$20,833.00	$0.00	$577,377.00		

Project Listing

P, Commission Approved ACIP, Selected in SCIP, Commission Approved SCIP, ACIP Under Grant, SCIP Under Grant Projects and Ye

	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Heber City Muni - Russ Mcdonald Field																
Install Weather Reporting Equipment (AWOS III), and Acquire Land for Hangar Development (Parcel 57, 12.37 acres).	2E+03	2002	ACIP Under Grant	$496,000.00	$0.00	$0.00	$496,000.00	$0.00	$0.00	$0.00	$24,707.00	$24,707.00	$0.00	$545,414.00	46.50	46.97
Conduct Airport Financial Feasability Study & Update Airport Layout Plan	2E+03	2002	ACIP Under Grant	$105,459.00	$105,459.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,253.00	$5,253.00	$0.00	$115,965.00	58.40	58.98
Airport Fencing, Design Taxilane, Land Acquisition for Approaches	2E+03	2003	Commission Approved ACIP	$520,000.00	$150,000.00	$0.00	$370,000.00	$0.00	$0.00	$0.00	$25,903.00	$25,903.00	$0.00	$571,806.00	45.00	46.80
Conduct Environmental Assessment for RW relocation	2E+03	2004	Selected in ACIP	$150,000.00	$0.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$7,471.96	$7,471.96	$0.00	$164,943.92	0.00	0.00
Improve Runway Safety Area	2E+03	2006	Selected in ACIP	$5,000,000.00	$0.00	$4,000,000.00	$1,000,000.00	$0.00	$0.00	$0.00	$249,065.00	$249,065.00	$0.00	$5,498,130.00	0.00	0.00
Improve Runway Safety Area	2E+03	2007	Selected in ACIP	$3,000,000.00	$0.00	$2,000,000.00	$1,000,000.00	$0.00	$0.00	$0.00	$149,439.00	$149,439.00	$0.00	$3,298,878.00	0.00	0.00
Sub Total: Heber City Muni - Russ Mcdonald Field				$9,271,459.00	$255,459.00	$6,150,000.00	$2,866,000.00	$0.00	$0.00	$0.00	$461,838.96	$461,838.96	$0.00	10,195,136.92		
Huntington Municipal																
Apron Reconstruction	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$160,200.00	$17,800.00	$0.00	$178,000.00	55.60	0.00
Prepare Airport Layout Plan, Safety Area Grading, Drainage, and Rehabilitate Runway Lighting, Automated Unicom	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$202,500.00	$22,500.00	$0.00	$225,000.00	40.50	0.00
Crack Seal, Seal Coat & Paint All Asphalt Surfaces	2E+03	2004	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$27,000.00	$3,000.00	$0.00	$30,000.00	0.00	0.00
Crack Seal, Seal Coat & Paint All Asphalt Surfaces	2E+03	2007	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$27,000.00	$3,000.00	$0.00	$30,000.00	0.00	0.00
Sub Total: Huntington Municipal				$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$416,700.00	$46,300.00	$0.00	$463,000.00		
Hurricane																
Rehab of portion of aircraft parking apron (Reconstruct & Expand Apron)	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$310,284.00	$34,476.00	$0.00	$344,760.00	49.35	52.00
Acquire Property, Airport Fencing	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$135,000.00	$15,000.00	$0.00	$150,000.00	38.40	40.46
Environmental Assessment for Runway Widening and Lengthening	2E+03	2004	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$50,000.00	$5,500.00	$0.00	$55,500.00	0.00	0.00
Phase I, Rehabilitate & Widen Runway to 75'. Extend Runway by 700'	2E+03	2005	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$360,000.00	$40,000.00	$0.00	$400,000.00	52.50	55.32
Phase II, Rehabilitate & Widen Runway to 75'. Extend Runway by 700'.	2E+03	2006	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$450,000.00	$50,000.00	$0.00	$500,000.00	0.00	0.00

Project Listing

P, Commission Approved ACIP, Selected in SCIP, Commission Approved SCIP, ACIP Under Grant, SCIP Under Grant Projects and Ye

	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Hurricane																
Construct North Partial Parallel Taxiway	2E+03	2007	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$180,000.00	$20,000.00	$0.00	$200,000.00	0.00	0.00
			Sub Total: Hurricane	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,485,284.00	$164,976.00	$0.00	$1,650,260.00		
Junction																
Crack Seal, Coal Tar Seal Coat & Paint All Asphalt Surfaces	2E+03	2003	Commission Approved SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$36,469.00	$4,052.00	$0.00	$40,521.00	47.60	46.47
Airport Layout Plan	2E+03	2004	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$30,000.00	$3,000.00	$0.00	$33,000.00	62.00	60.53
Crack Seal, Seal Coat & Paint All Asphat Surfaces	2E+03	2005	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$20,000.00	$2,000.00	$0.00	$22,000.00	0.00	0.00
Crack Seal, Seal coat & Paint All Asphalt Surfaces	2E+03	2007	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$20,000.00	$2,000.00	$0.00	$22,000.00	0.00	0.00
			Sub Total: Junction	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$106,469.00	$11,052.00	$0.00	$117,521.00		
Kanab Municipal																
rehab RW 1/19, TW, Terminal Apron, pavement rehab., relocate RW threshold & lights, safety area grading, consruct RW end turnarounds, install electronic security gates	2E+03	2003	ACIP Under Grant	$1,650,000.00	$0.00	$0.00	$1,650,000.00	$0.00	$0.00	$0.00	$82,192.00	$82,191.00	$0.00	$1,814,383.00	61.60	63.14
Rehabilitate Runway 1/19 (Amendment)	2E+03	2003	Commission Approved ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	65.60	69.21
Remove & Relocate Kanab City Road. Remove Trees in FAA Part 77 Safety Area. Remove Dog Kennel. Construct New Airport Fencing on New Property Line.	2E+03	2005	Selected in ACIP	$166,875.00	$150,000.00	$0.00	$16,875.00	$0.00	$0.00	$0.00	$8,312.00	$8,313.00	$0.00	$183,500.00	0.00	0.00
Remove & Replace Runway Lighting System. New Runway Signage.	2E+03	2006	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	42.00	44.31
Crack seal & Seal Coat Airport Asphalt	2E+03	2006	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$40,000.00	$10,000.00	$0.00	$50,000.00	47.60	48.79
Rehab Portion of Aircraft Parking Apron	2E+03	2007	Selected in ACIP	$263,726.00	$150,000.00	$0.00	$113,726.00	$0.00	$0.00	$0.00	$13,137.00	$13,137.00	$0.00	$290,000.00	0.00	0.00
			Sub Total: Kanab Municipal	$2,380,601.00	$600,000.00	$0.00	$1,780,601.00	$0.00	$0.00	$0.00	$158,585.00	$128,585.00	$0.00	$2,667,771.00		
Loa - Wayne Wonderland																
Crack Seal, Slurry Seal, & Paint	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$46,000.00	$5,111.00	$0.00	$51,111.00	47.60	44.03

Project Listing

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	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Loa - Wayne Wonderland																
Install Perimeter Fencing, Phase I	2E+03	2003	ACIP Under Grant	$40,000.00	$40,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,993.00	$0.00	$41,993.00	38.40	36.67
Install Perimeter Fencing, Phase II	2E+03	2003	ACIP Under Grant	$40,000.00	$40,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,992.00	$1,992.00	$0.00	$43,984.00	38.40	35.52
Land Acquisition for RPZ, Light Obstructions, Automated Unicom	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$180,000.00	$20,000.00	$0.00	$200,000.00	40.50	37.46
New Apron (Phase I) Prepare Subbase & Base for Stub Taxiways, Runway Tea-Cup Turnaround, Apron, Access Road and Parking.	2E+03	2005	Selected in ACIP	$218,256.00	$40,000.00	$0.00	$178,256.00	$0.00	$0.00	$0.00	$10,872.00	$10,872.00	$0.00	$240,000.00	55.60	51.43
New Apron (Phase II), Asphalt Pavement & Paint for Taxiway, Apron, Access Road, and Parking. Install Tiedowns.	2E+03	2006	Selected in ACIP	$181,880.00	$40,000.00	$0.00	$141,880.00	$0.00	$0.00	$0.00	$9,060.00	$9,060.00	$0.00	$200,000.00	50.40	46.62
R/W & Apron Crack Seal, Slurry Seal, & Paint	2E+03	2007	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$43,200.00	$10,800.00	$0.00	$54,000.00	47.60	44.03
	Sub Total: Loa - Wayne Wonderland			$480,136.00	$160,000.00	$0.00	$320,136.00	$0.00	$0.00	$0.00	$291,124.00	$59,828.00	$0.00	$831,088.00		
Logan-Cache																
Hangar Access Road	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$160,000.00	$40,000.00	$0.00	$200,000.00	51.10	52.38
Runway 17/35 & Taxiway B Strengthening, & Precision Markings	2E+03	2002	ACIP Under Grant	$818,460.00	$0.00	$0.00	$818,460.00	$0.00	$0.00	$0.00	$40,770.00	$40,770.00	$0.00	$900,000.00	69.60	71.34
Design & Construct New Access Road. Extend Utilities, Water & Fire Protection to New Commercial Apron Area	2E+03	2003	Commission Approved SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$180,000.00	$20,000.00	$0.00	$200,000.00	22.00	22.55
Construct Taxilane & Acquire Land for Approaches (Runway Visibility Zone)	2E+03	2003	ACIP Under Grant	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	43.50	45.89
Instrument Landing System (ILS) and Medium intensity Approach Lighting Sytem with Runway Alignment Indicator Lights (MALSR).	2E+03	2004	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$90,600.00	$90,600.00	$1,668,800.00	$2,000,000.00	0.00	0.00
Snow Blower/Sweeper & Emergency Generator	2E+03	2005	Selected in ACIP	$118,222.00	$118,222.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,889.00	$5,889.00	$0.00	$130,000.00	0.00	0.00
Crack Seal Coat Runway 10/28	2E+03	2006	Selected in SCIP	$136,410.00	$0.00	$0.00	$136,410.00	$0.00	$0.00	$0.00	$6,795.00	$6,795.00	$0.00	$150,000.00	0.00	0.00
Apron Reconstruction, Reconfigure Tie-Down Area	2E+03	2007	Selected in ACIP	$2,000,680.00	$0.00	$0.00	$2,000,680.00	$0.00	$0.00	$0.00	$99,660.00	$99,660.00	$0.00	$2,200,000.00	0.00	0.00
			Sub Total: Logan-Cache	$3,373,772.00	$418,222.00	$0.00	$2,955,550.00	$0.00	$0.00	$0.00	$591,186.00	$311,186.00	$1,668,800.00	$5,944,944.00		

Project Listing

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Manila																
Crack Seal, Seal Coat & Paint Runway, Taxiway & Apron. Airport Layout, NPIAS CIP Project Report	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$84,600.00	$9,400.00	$0.00	$94,000.00	47.60	0.00
General Aviation Entitlement Project	2E+03	2004	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
Crack Seal, Seal Coat & Paint All Asphalt Surfaces	2E+03	2005	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$36,000.00	$4,000.00	$0.00	$40,000.00	0.00	0.00
General Aviation Entitlement Project	2E+03	2005	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
General Aviation Entitlement Project	2E+03	2006	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
General Aviation Entitlement Project	2E+03	2007	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
			Sub Total: Manila	$600,000.00	$600,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$150,488.00	$43,288.00	$0.00	$793,776.00		
Manti-Ephraim																
Powerline,Fence & beacon/windsock relocation; Relocate Runway 03 Threshold and lights; Acquire Nav. Easements for Approaches; Install New Electircal Vault; Safety Area Grading;	2E+03	2003	ACIP Under Grant	$411,180.00	$291,180.00	$0.00	$120,000.00	$0.00	$0.00	$0.00	$18,626.00	$18,627.00	$0.00	$448,433.00	89.00	86.44
Construct Wildlife Fencing	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$153,135.00	$17,015.00	$0.00	$170,150.00	38.40	37.30
New Superunicom/digiwix System (Entitlement Funds)	2E+03	2004	Selected in ACIP	$36,376.00	$36,376.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,812.00	$1,812.00	$0.00	$40,000.00	42.00	40.79
Construct Aircraft Turnarounds (Tea-cups) on R/W 3-21	2E+03	2004	Selected in ACIP	$125,815.49	$125,815.49	$0.00	$0.00	$0.00	$0.00	$0.00	$6,267.26	$6,267.26	$0.00	$138,350.00	0.00	0.00
Crack Seal, Seal Coat and Paint	2E+03	2005	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$54,000.00	$6,000.00	$0.00	$60,000.00	47.60	46.23
			Sub Total: Manti-Ephraim	$573,371.49	$453,371.49	$0.00	$120,000.00	$0.00	$0.00	$0.00	$233,840.26	$49,721.26	$0.00	$856,933.00		
Milford Municipal																
Land Acquisition (Parcels E1 & E2) forApproaches (RPZ & OFA). Replace Beacon.	2E+03	2003	ACIP Under Grant	$51,682.00	$51,682.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,574.00	$2,575.00	$0.00	$56,831.00	40.50	38.63
Espand Apron for Helcopters	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$90,000.00	$10,000.00	$0.00	$100,000.00	37.50	34.64
Crack Seal and Seal Coat Runway, Apron and Paint	2E+03	2004	Commission Approved SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$63,000.00	$7,000.00	$0.00	$70,000.00	47.60	43.97
Grade Non-Precision Instrument Primary Surface	2E+03	2004	Selected in ACIP	$227,350.00	$150,000.00	$0.00	$77,350.00	$0.00	$0.00	$0.00	$11,325.00	$11,325.00	$0.00	$250,000.00	0.00	0.00

Project Listing

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Milford Municipal																
EA and BLM Conveyance	2E+03	2005	Selected in ACIP	$100,034.00	$100,034.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4,983.00	$4,983.00	$0.00	$110,000.00	40.40	37.32
Phase I, Grading Runway 16 Extension (1,600') & Tea-Cup Turnaround. Extend Runway Lights.	2E+03	2006	Selected in ACIP	$500,000.00	$200,000.00	$0.00	$300,000.00	$0.00	$0.00	$0.00	$24,906.00	$24,906.00	$0.00	$549,812.00	0.00	0.00
		Sub Total: Milford Municipal		$879,066.00	$501,716.00	$0.00	$377,350.00	$0.00	$0.00	$0.00	$196,788.00	$60,789.00	$0.00	$1,136,643.00		
Moab-Canyonlands Field																
Expand Aircraft Parking Apron (Design Only).	2E+03	2002	ACIP Under Grant	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	57.60	68.69
Modify Terminal Building (2001 General Aviation Entitlement Project)	2E+03	2002	Commission Approved SCIP	$50,000.00	$50,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4,981.31	$0.00	$54,981.31	40.95	50.06
Expand Apron	2E+03	2003	ACIP Under Grant	$389,980.00	$294,089.00	$0.00	$0.00	$0.00	$95,891.00	$0.00	$19,426.00	$19,426.00	$0.00	$428,832.00	43.75	50.86
Crack Seal, Seal Coat & Paint All Asphalt Surfaces	2E+03	2004	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$76,500.00	$8,500.00	$0.00	$85,000.00	49.35	57.37
Construct Connector Taxiway to Runway 15/33, Runway 15/33 Construct and Slurry Seal	2E+03	2005	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$99,000.00	$11,000.00	$0.00	$110,000.00	46.50	54.06
EA for C-II Upgrade and Land Acquisition	2E+03	2005	Selected in ACIP	$68,205.00	$68,205.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3,397.50	$3,397.50	$0.00	$75,000.00	0.00	0.00
Land Acquisition, Relocate Road, Fence to Clear C-II ROFA S.W. Corner of Airfield	2E+03	2006	Selected in ACIP	$113,675.00	$113,675.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,662.00	$5,663.00	$0.00	$125,000.00	16.20	19.32
Crack Seal, Seal Coat & Paint All Asphalt Surfaces	2E+03	2007	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$76,500.00	$8,500.00	$0.00	$85,000.00	0.00	0.00
		Sub Total: Moab-Canyonlands Field		$771,860.00	$675,969.00	$0.00	$0.00	$0.00	$95,891.00	$0.00	$287,957.50	$68,939.81	$0.00	$1,128,757.31		
Monticello																
Update Airport Layout Plan (ALP) & Financial Feasibility Study	2E+03	2002	ACIP Under Grant	$72,752.00	$72,752.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3,624.00	$3,624.00	$0.00	$80,000.00	62.00	58.90
Environmental Assessment for New Airport Site	2E+03	2003	Selected in ACIP	$113,675.00	$113,675.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,662.50	$5,662.50	$0.00	$125,000.00	0.00	0.00
Land Acquisition & Fencing for New Airport Site	2E+03	2004	Selected in ACIP	$463,794.00	$268,120.00	$0.00	$195,674.00	$0.00	$0.00	$0.00	$23,103.00	$23,103.00	$0.00	$510,000.00	0.00	0.00
Grading, Drainage & Utilities	2E+03	2005	Selected in ACIP	$1,136,750.00	$150,000.00	$0.00	$986,750.00	$0.00	$0.00	$0.00	$56,625.00	$56,625.00	$0.00	$1,250,000.00	89.00	84.55
Runway, Taxiway & Apron Construction/Paving	2E+03	2006	Selected in ACIP	$1,218,596.00	$150,000.00	$0.00	$1,068,596.00	$0.00	$0.00	$0.00	$60,702.00	$60,702.00	$0.00	$1,340,000.00	0.00	0.00
Auto Parking (Gravel), Access Road (Gravel), Electrical & Lighting, PAPIs Apron Lighting	2E+03	2007	Selected in ACIP	$704,785.00	$150,000.00	$0.00	$554,785.00	$0.00	$0.00	$0.00	$35,107.50	$35,107.50	$0.00	$775,000.00	0.00	0.00

Project Listing

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Monticello																
Sub Total: Monticello				$3,710,352.00	$904,547.00	$0.00	$2,805,805.00	$0.00	$0.00	$0.00	$184,824.00	$184,824.00	$0.00	$4,080,000.00		
Morgan County																
Crack Seal, Seal Coat & Paint Runway and Apron	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$49,500.00	$5,500.00	$0.00	$55,000.00	52.85	48.75
ALP Update for Existing Morgan Airport	2E+03	2004	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$36,000.00	$4,000.00	$0.00	$40,000.00	0.00	0.00
Crack Seal, Seal Coat & Paint All Asphalt Surfaces	2E+03	2006	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$45,000.00	$5,000.00	$0.00	$50,000.00	0.00	0.00
Sub Total: Morgan County				$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$130,500.00	$14,500.00	$0.00	$145,000.00		
Mount Pleasant																
RW & TW Lighting & Mini ALP	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$165,578.40	$18,397.60	$0.00	$183,976.00	47.60	41.89
Crack Seal, Fog Coat and Airport Markings. Fencing. Land Easements & New Aircraft Fueling Apron.	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$157,098.00	$17,456.00	$0.00	$174,554.00	47.60	41.89
Paint RW 2/20	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3,015.00	$335.00	$0.00	$3,350.00	0.00	0.00
Crack Seal, Seal Coat & Paint All Asphalt Surfaces.	2E+03	2006	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$27,000.00	$3,000.00	$0.00	$30,000.00	0.00	0.00
Sub Total: Mount Pleasant				$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$352,691.40	$39,188.60	$0.00	$391,880.00		
Nephi Municipal																
Construct New Runway 16/34 (Design Only)	2E+03	2002	ACIP Under Grant	$543,907.00	$150,000.00	$0.00	$393,907.00	$0.00	$0.00	$0.00	$19,621.00	$19,622.00	$0.00	$583,150.00	65.60	66.26
Rehabilitate Portion of Runway 16/34, Crack Seal, Seal Coat & Paint	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$134,540.00	$14,949.00	$0.00	$149,489.00	65.60	66.26
Construct New Runway 16/34 (Site prep)	2E+03	2003	ACIP Under Grant	$1,942,322.00	$150,000.00	$0.00	$1,792,322.00	$0.00	$0.00	$0.00	$96,793.00	$96,793.00	$0.00	$2,135,908.00	59.15	61.52
Crack Seal, Seal Coat & Pavement Replacement (Amendment)	2E+03	2003	Commission Approved SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$22,939.00	$2,549.00	$0.00	$25,488.00	47.60	48.08
Construct New Runway 16/34	2E+03	2004	Selected in ACIP	$1,950,000.00	$0.00	$0.00	$1,950,000.00	$0.00	$0.00	$0.00	$97,135.00	$97,136.00	$0.00	$2,144,271.00	0.00	0.00
Install Perimeter Wildlife Fencing	2E+03	2004	Selected in ACIP	$250,000.00	$0.00	$0.00	$250,000.00	$0.00	$0.00	$0.00	$12,453.00	$12,453.00	$0.00	$274,906.00	0.00	0.00
Rehab and Extend Aircraft Parking Apron	2E+03	2005	Selected in ACIP	$300,000.00	$0.00	$0.00	$300,000.00	$0.00	$0.00	$0.00	$14,944.00	$14,944.00	$0.00	$329,888.00	0.00	0.00
Construct Taxiway to New Runway 16/34	2E+03	2005	Selected in ACIP	$1,200,000.00	$0.00	$0.00	$1,200,000.00	$0.00	$0.00	$0.00	$59,776.00	$59,776.00	$0.00	$1,319,552.00	0.00	0.00

Project Listing

P, Commission Approved ACIP, Selected in SCIP, Commission Approved SCIP, ACIP Under Grant, SCIP Under Grant Projects and Ye

	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Nephi Municipal																
Seal Coat, Crack Seal & Paint	2E+03	2007	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$60,000.00	$15,000.00	$0.00	$75,000.00	47.60	48.08
Sub Total: Nephi Municipal				$6,186,229.00	$300,000.00	$0.00	$5,886,229.00	$0.00	$0.00	$0.00	$518,201.00	$333,222.00	$0.00	$7,037,652.00		
Ogden-Hinckley																
Rehabilitate Runway 3/21 (Design Only)	2E+03	2002	ACIP Under Grant	$350,000.00	$0.00	$0.00	$350,000.00	$0.00	$0.00	$0.00	$17,434.57	$17,434.57	$0.00	$384,869.14	71.60	73.03
Construct Taxilane Foxtrot	2E+03	2002	ACIP Under Grant	$300,000.00	$300,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,471.00	$22,417.00	$0.00	$329,888.00	60.90	63.95
Weed Control	2E+03	2003	Commission Approved SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,000.00	$3,000.00	$0.00	$8,000.00	52.85	56.02
Rehabilitate Runway 3/21(Phase I)	2E+03	2003	ACIP Under Grant	$3,805,230.00	$0.00	$3,805,230.00	$0.00	$0.00	$0.00	$0.00	$189,550.00	$189,550.00	$0.00	$4,184,330.00	71.60	73.03
Rehabilitate Runway 3/21 (Phase II)	2E+03	2003	Selected in ACIP	$5,100,000.00	$150,000.00	$4,550,000.00	$400,000.00	$0.00	$0.00	$0.00	$254,046.00	$254,046.00	$0.00	$5,608,092.00	0.00	0.00
Rehabilitate Hangar Taxilanes	2E+03	2005	Selected in ACIP	$540,000.00	$0.00	$0.00	$540,000.00	$0.00	$0.00	$0.00	$26,899.00	$26,899.00	$0.00	$593,798.00	52.85	53.91
Weed Control	2E+03	2006	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4,000.00	$1,000.00	$0.00	$5,000.00	52.85	53.91
Rejuvenate Taxiways C, A, E	2E+03	2006	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$160,000.00	$40,000.00	$0.00	$200,000.00	52.85	53.91
Update Airport Master Plan	2E+03	2006	Selected in ACIP	$90,000.00	$0.00	$0.00	$90,000.00	$0.00	$0.00	$0.00	$4,483.00	$4,483.00	$0.00	$98,966.00	68.00	69.36
Construct taxilanes for Ogden Gateway Center	2E+03	2007	Selected in ACIP	$433,784.00	$433,784.00	$0.00	$0.00	$0.00	$0.00	$0.00	$21,608.00	$21,608.00	$0.00	$477,000.00	60.90	62.12
Sub Total: Ogden-Hinckley				$10,619,014.00	$883,784.00	$8,355,230.00	$1,380,000.00	$0.00	$0.00	$0.00	$690,491.57	$580,437.57	$0.00	$11,889,943.14		
Panguitch Municipal																
Emergency Runway Pavement Crack Sealing.	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$18,000.00	$2,000.00	$0.00	$20,000.00	0.00	0.00
Install Apron Lighting, Improve Airport Erosion Control, & Rehabilitate Apron	2E+03	2002	ACIP Under Grant	$102,000.00	$102,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,081.00	$5,081.00	$0.00	$112,162.00	40.50	41.51
Remove Obstructions (Hangars)	2E+03	2003	ACIP Under Grant	$102,000.00	$102,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,081.00	$5,081.00	$0.00	$112,162.00	29.10	29.83
Construct Water Storage Tanks for Fire Protection, New Security Lights, & Aircraft Apron Expansion for Helicopters	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$103,500.00	$11,500.00	$0.00	$115,000.00	47.10	46.86
Update Airport Master Plan	2E+03	2004	Selected in ACIP	$18,188.00	$18,188.00	$0.00	$0.00	$0.00	$0.00	$0.00	$906.00	$906.00	$0.00	$20,000.00	62.00	61.69

Project Listing

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	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Panguitch Municipal																
Enlarge Turnarounds (Tea-cup Design) on both ends of runway 1/19.	2E+03	2005	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	42.00	43.05
Construct Partial Parallel Taxiway and Lighting	2E+03	2006	Selected in ACIP	$450,000.00	$150,000.00	$0.00	$300,000.00	$0.00	$0.00	$0.00	$22,416.00	$22,416.00	$0.00	$494,832.00	0.00	0.00
			Sub Total: Panguitch Municipal	$822,188.00	$522,188.00	$0.00	$300,000.00	$0.00	$0.00	$0.00	$162,456.00	$54,456.00	$0.00	$1,039,100.00		
Parowan																
Construct Parallel Taxiway Phase I & Phase II	2E+03	2002	ACIP Under Grant	$473,000.00	$0.00	$0.00	$473,000.00	$0.00	$0.00	$0.00	$23,561.00	$23,562.00	$0.00	$520,123.00	57.40	58.83
Aircraft Apron Expansion	2E+03	2003	ACIP Under Grant	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	39.00	39.97
Pavement Preservation and Rejuvenation	2E+03	2004	Selected in ACIP	$77,300.00	$77,300.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3,850.00	$3,850.00	$0.00	$85,000.00	49.35	49.10
Construct Taxilanes & Glider Apron	2E+03	2004	Selected in ACIP	$200,000.00	$65,000.00	$0.00	$135,000.00	$0.00	$0.00	$0.00	$9,962.60	$9,962.60	$0.00	$219,925.21	0.00	0.00
Land Acquisition for Landside Development	2E+03	2005	Selected in ACIP	$27,282.00	$27,282.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,359.00	$1,359.00	$0.00	$30,000.00	0.00	0.00
EA for Runway Extension	2E+03	2006	Selected in ACIP	$77,300.00	$77,300.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3,850.50	$3,850.50	$0.00	$85,001.00	0.00	0.00
Crack Seal & Seal Coat on Apron	2E+03	2007	Selected in ACIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$36,000.00	$4,000.00	$0.00	$40,000.00	49.35	49.10
Land Acquisition for Runway & Taxiway Extension (80 Acres).	2E+03	2007	Selected in ACIP	$291,008.00	$291,008.00	$0.00	$0.00	$0.00	$0.00	$0.00	$14,496.00	$14,496.00	$0.00	$320,000.00	0.00	0.00
			Sub Total: Parowan	$1,295,890.00	$687,890.00	$0.00	$608,000.00	$0.00	$0.00	$0.00	$100,551.10	$68,552.10	$0.00	$1,464,993.21		
Price-Carbon County																
Construct a Portion of Partial Parallel Taxiway to Runway 18	2E+03	2002	ACIP Under Grant	$1,591,000.00	$0.00	$0.00	$1,591,000.00	$0.00	$0.00	$0.00	$79,252.00	$79,253.00	$0.00	$1,749,505.00	57.40	59.70
Seal Coat, Crack Seal & Paint Runway 18/36.	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$77,846.00	$8,650.00	$0.00	$86,496.00	49.35	49.84
Acquire Land for Approaches (Approximately 12.19 Acres), Construct Aircraft Parking Apron, Construct Parallel Taxiway (Phase II).	2E+03	2003	ACIP Under Grant	$780,000.00	$150,000.00	$0.00	$630,000.00	$0.00	$0.00	$0.00	$38,854.17	$38,854.17	$0.00	$857,708.34	47.10	47.57
General Aviation Entitlement Project	2E+03	2005	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
Crack Seal, Seal Coat & Remark Asphalt Surfaces	2E+03	2006	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$90,000.00	$10,000.00	$0.00	$100,000.00	49.35	49.84
General Aviation Entitlement Project	2E+03	2006	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00

Project Listing

P, Commission Approved ACIP, Selected in SCIP, Commission Approved SCIP, ACIP Under Grant, SCIP Under Grant Projects and Ye

	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Price-Carbon County																
General Aviation Entitlement Project	2E+03	2007	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
Sub Total: Price-Carbon County				$2,821,000.00	$600,000.00	$0.00	$2,221,000.00	$0.00	$0.00	$0.00	$308,368.17	$159,173.17	$0.00	$3,288,541.34		
Provo Municipal																
Rehabilitate North Apron	2E+03	2002	ACIP Under Grant	$1,260,000.00	$0.00	$1,260,000.00	$0.00	$0.00	$0.00	$0.00	$62,764.46	$62,764.46	$0.00	$1,385,528.92	61.60	63.91
Acquire Snow Removal Equipment, wildlife fencing and rehab of Apron	2E+03	2002	ACIP Under Grant	$480,000.00	$0.00	$480,000.00	$0.00	$0.00	$0.00	$0.00	$23,910.00	$23,910.00	$0.00	$527,820.00	48.30	50.11
Terminal Apron Expansion, Taxilanes & 33 Aircraft Tiedowns	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$90,625.00	$34,924.00	$0.00	$125,549.00	47.25	49.97
Extend Taxiway A (Design Only)	2E+03	2003	Commission Approved ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	52.50	56.04
Construct New Air Traffic Control Tower	2E+03	2004	Selected in SCIP	$1,000,000.00	$0.00	$1,000,000.00	$0.00	$0.00	$0.00	$0.00	$250,000.00	$500,000.00	$0.00	$1,750,000.00	89.00	92.34
Extend Taxiway "A."	2E+03	2004	Selected in ACIP	$1,450,000.00	$0.00	$0.00	$1,450,000.00	$0.00	$0.00	$0.00	$72,228.95	$72,228.95	$0.00	$1,594,457.89	0.00	0.00
Reconstruct South Apron	2E+03	2005	Selected in ACIP	$1,100,000.00	$0.00	$0.00	$1,100,000.00	$0.00	$0.00	$0.00	$54,794.38	$54,794.38	$0.00	$1,209,588.76	61.60	65.76
Rehabilitate Taxilanes (North)	2E+03	2005	Selected in ACIP	$205,000.00	$150,000.00	$0.00	$55,000.00	$0.00	$0.00	$0.00	$38,000.00	$38,000.00	$0.00	$281,000.00	60.90	63.18
Entitlement Project	2E+03	2006	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
Entitlement Project	2E+03	2007	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
Sub Total: Provo Municipal				$5,945,000.00	$600,000.00	$2,740,000.00	$2,605,000.00	$0.00	$0.00	$0.00	$614,738.79	$809,037.79	$0.00	$7,368,776.58		
Richfield Municipal																
Remove Obstructions, Expand Apron to Fuel Farm, install electronic airfield	2E+03	2002	ACIP Under Grant	$126,404.00	$126,404.00	$0.00	$0.00	$0.00	$0.00	$0.00	$6,296.00	$6,297.00	$0.00	$138,997.00	64.00	69.44
Acquire Land for Approaches (Parcels 27F, 28F, 29F)	2E+03	2003	ACIP Under Grant	$126,404.00	$126,404.00	$0.00	$0.00	$0.00	$0.00	$0.00	$6,296.00	$6,297.00	$0.00	$138,997.00	42.00	45.57
General Aviation Entitlement Project	2E+03	2004	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
General Aviation Entitlement Project	2E+03	2005	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
General Aviation Entitlement Project	2E+03	2006	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
General Aviation Entitlement Project	2E+03	2007	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00

Project Listing

P, Commission Approved ACIP, Selected in SCIP, Commission Approved SCIP, ACIP Under Grant, SCIP Under Grant Projects and Ye

	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Richfield Municipal																
Sub Total: Richfield Municipal				$852,808.00	$852,808.00	$0.00	$0.00	$0.00	$0.00	$0.00	$42,480.00	$42,482.00	$0.00	$937,770.00		
Roosevelt Municipal																
Install Runway 7/25 PAPI & REILs. Rehabilitate Runway.	2E+03	2002	ACIP Under Grant	$149,793.00	$149,793.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,452.00	$7,452.00	$0.00	$164,697.00	0.00	0.00
Rehabilitate Electrical Vault, Light Obstructions (Terminal Area), Acquire Land for Approaches (Parcels F1 & F2).	2E+03	2003	Commission Approved ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	67.50	64.29
Construct Tea-Cup Turnaround Taxiways on Both RW Ends	2E+03	2004	Selected in ACIP	$118,222.00	$118,222.00	$0.00	$0.00	$0.00	$0.00	$0.00	$5,889.00	$5,889.00	$0.00	$130,000.00	45.60	42.07
Update Signage	2E+03	2004	Selected in ACIP	$10,000.00	$10,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$498.13	$498.13	$0.00	$10,996.26	42.30	39.02
Relocate Fencing to New Boundry	2E+03	2004	Selected in ACIP	$22,735.00	$22,735.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,132.50	$1,132.50	$0.00	$25,000.00	38.40	35.42
Seal Coat & Crack Seal Airfield Pavements	2E+03	2005	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$35,000.00	$3,500.00	$0.00	$38,500.00	47.60	43.91
Expand Apron & Install Ramp Lighting	2E+03	2007	Selected in ACIP	$341,025.00	$300,000.00	$0.00	$41,025.00	$0.00	$0.00	$0.00	$16,987.50	$16,987.50	$0.00	$375,000.00	42.00	38.74
Sub Total: Roosevelt Municipal				$791,775.00	$750,750.00	$0.00	$41,025.00	$0.00	$0.00	$0.00	$74,431.13	$42,931.13	$0.00	$909,137.26		
Salina-Gunnison																
Crack Seal, Seal Coat & Paint. Airport Layout, NPIAS & CIP Report.	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$56,250.00	$6,250.00	$0.00	$62,500.00	47.60	43.79
Rehabilitate Runway, Apron & Connecting Taxiway	2E+03	2005	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$360,000.00	$40,000.00	$0.00	$400,000.00	65.60	60.35
Seal Coat All Asphalt Surfaces	2E+03	2006	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$27,000.00	$3,000.00	$0.00	$30,000.00	0.00	0.00
Sub Total: Salina-Gunnison				$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$443,250.00	$49,250.00	$0.00	$492,500.00		
Salt Lake City Muni 2																
Security Fencing	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$62,000.00	$62,000.00	$0.00	$124,000.00	0.00	0.00
Rehabilitate Runway 16/34	2E+03	2003	ACIP Under Grant	$950,000.00	$450,000.00	$0.00	$500,000.00	$0.00	$0.00	$0.00	$39,850.00	$54,795.00	$0.00	$1,044,645.00	71.60	72.85
Automated Vehicle & Pedestrian Security Gates	2E+03	2003	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3,471.50	$3,471.50	$0.00	$6,943.00	42.90	45.80
Sub Total: Salt Lake City Muni 2				$950,000.00	$450,000.00	$0.00	$500,000.00	$0.00	$0.00	$0.00	$105,321.50	$120,266.50	$0.00	$1,175,588.00		

Project Listing

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	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Skypark																
Easements	2E+ 03	2002	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$170,000.00	$30,000.00	$0.00	$200,000.00	45.00	43.54
Master Plan Study	2E+ 03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$60,000.00	$15,000.00	$0.00	$75,000.00	68.00	65.79
Runway/Taxiway Maintenace	2E+ 03	2004	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$36,000.00	$4,000.00	$0.00	$40,000.00	52.85	51.13
Runway/Taxiway Maintenance	2E+ 03	2007	Selected in SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$36,000.00	$4,000.00	$0.00	$40,000.00	0.00	0.00
			Sub Total: Skypark	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$302,000.00	$53,000.00	$0.00	$355,000.00		
Spanish Fork-Springville																
Crack seal & seal coat runway, taxiway and apron	2E+ 03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$85,000.00	$15,000.00	$0.00	$100,000.00	52.85	54.17
Construct Taxilanes to T-Hangers	2E+ 03	2003	ACIP Under Grant	$150,000.00	$0.00	$0.00	$150,000.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	60.90	64.25
Acquire Land/Easements for Approaches (Parcels 10, 19, 22, 23, 24, 25)	2E+ 03	2003	Commission Approved ACIP	$690,000.00	$150,000.00	$0.00	$540,000.00	$0.00	$0.00	$0.00	$34,371.00	$34,371.00	$0.00	$758,742.00	45.00	46.12
Wetlands Mitigation	2E+ 03	2004	Selected in ACIP	$500,000.00	$150,000.00	$0.00	$350,000.00	$0.00	$0.00	$0.00	$24,906.53	$24,906.53	$0.00	$549,813.06	60.80	62.32
Acquire Land/Easements for Approaches (Parcel 21)	2E+ 03	2004	Selected in ACIP	$730,000.00	$0.00	$0.00	$730,000.00	$0.00	$0.00	$0.00	$36,363.53	$36,363.53	$0.00	$802,727.07	45.00	46.12
Rehabilitate Aircraft Parking Apron	2E+ 03	2006	Selected in ACIP	$360,000.00	$0.00	$0.00	$360,000.00	$0.00	$0.00	$0.00	$17,932.68	$17,932.68	$0.00	$395,865.37	61.60	63.14
Rehab Runway 12/30	2E+ 03	2006	Selected in ACIP	$800,000.00	$300,000.00	$0.00	$500,000.00	$0.00	$0.00	$0.00	$36,363.53	$36,363.53	$0.00	$872,727.07	71.60	73.39
Expand Apron	2E+ 03	2006	Selected in ACIP	$400,000.00	$0.00	$0.00	$400,000.00	$0.00	$0.00	$0.00	$19,925.21	$19,925.21	$0.00	$439,850.41	0.00	0.00
			Sub Total: Spanish Fork-Springville	$3,630,000.00	$600,000.00	$0.00	$3,030,000.00	$0.00	$0.00	$0.00	$262,334.48	$192,334.48	$0.00	$4,084,668.97		
St George Municipal																
Seal Coat all Airport Surfaces with Coal Tar Material and Repainting Asphalt Surfaces	2E+ 03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$114,977.00	$114,977.00	$0.00	$229,954.00	52.85	64.81
			Sub Total: St George Municipal	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$114,977.00	$114,977.00	$0.00	$229,954.00		

Project Listing

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	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
St George New																
Construct New Airport, Acquire Land (Phase II)	2E+03	2002	Commission Approved SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$99,626.13	$0.00	$99,626.13	36.90	45.20
Phase I Land Acquisition(248 acres) & planning for development of new airport includng support services	2E+03	2002	ACIP Under Grant	$3,150,000.00	$0.00	$0.00	$0.00	$3,150,000.00	$0.00	$0.00	$0.00	$318,823.00	$0.00	$3,468,823.00	36.90	42.25
Construct New Airport, Acquire Land (Phase II).	2E+03	2002	Commission Approved SCIP	$650,000.00	$0.00	$0.00	$0.00	$650,000.00	$0.00	$0.00	$0.00	$64,756.98	$0.00	$714,756.98	36.90	44.46
Construct New Airport, Acquire Land (Phase II)	2E+03	2002	Commission Approved SCIP	$500,000.00	$0.00	$0.00	$0.00	$500,000.00	$0.00	$0.00	$0.00	$49,813.06	$0.00	$549,813.06	36.90	44.46
Construct New Airport, Acquire Land (Phase II)	2E+03	2002	Commission Approved SCIP	$5,000,000.00	$0.00	$0.00	$0.00	$1,000,000.00	$4,000,000.00	$0.00	$0.00	$498,130.64	$0.00	$5,498,130.64	36.90	44.46
Construct New Airport	2E+03	2003	Commission Approved ACIP	$7,000,000.00	$0.00	$0.00	$0.00	$1,000,000.00	$6,000,000.00	$0.00	$49,813.00	$647,570.00	$0.00	$7,697,383.00	48.65	58.62
Environmental Study	2E+03	2003	ACIP Under Grant	$500,000.00	$0.00	$0.00	$0.00	$500,000.00	$0.00	$0.00	$0.00	$49,813.00	$0.00	$549,813.00	0.00	0.00
Construct New Airport	2E+03	2004	Selected in ACIP	$13,000,000.00	$0.00	$0.00	$0.00	$2,000,000.00	$11,000,000.00	$0.00	$0.00	$1,295,139.65	$0.00	$14,295,139.66	48.65	58.62
			Sub Total: St George New	$29,800,000.00	$0.00	$0.00	$0.00	$8,799,999.99	$21,000,000.00	$0.00	$49,813.00	$3,023,672.46	$0.00	$32,873,485.46		
Tooele Valley Airport-Bolinder Field																
Bury Overhead Utility Obstructions	2E+03	2002	Commission Approved SCIP	$55,486.40	$0.00	$55,486.40	$0.00	$0.00	$0.00	$0.00	$2,868.30	$2,868.30	$0.00	$61,223.00	20.00	21.00
Install Weather Reporting Equipment	2E+03	2003	Commission Approved ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	46.50	48.83
Apron Expansion	2E+03	2005	Selected in ACIP	$600,000.00	$0.00	$600,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$59,776.00	$0.00	$659,776.00	42.00	45.36
General Aviation Entitlement Project	2E+03	2006	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
General Aviation Entitlement Project	2E+03	2007	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
			Sub Total: Tooele Valley Airport-Bolinder Field	$1,105,486.40	$450,000.00	$655,486.40	$0.00	$0.00	$0.00	$0.00	$25,284.30	$85,060.30	$0.00	$1,215,831.00		
Vernal																
Acquire land (parcels 27 & 28), Install Emergency Generator, Construct Access Road (design only), and Remove Obstructions (trees).	2E+03	2002	ACIP Under Grant	$188,716.00	$188,716.00	$0.00	$0.00	$0.00	$0.00	$0.00	$9,400.00	$9,401.00	$0.00	$207,517.00	38.40	40.13
Crack Seal, Seal Coat & Paint Parallel Taxiway, Taxiway Connectors	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$86,400.00	$21,600.00	$0.00	$108,000.00	49.35	50.09
Financial Plan, Soils Study, Pre-Design Engineering, Layout Plan for Airport Relocation	2E+03	2002	SCIP Under Grant	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$57,500.00	$172,500.00	$0.00	$230,000.00	54.40	59.57

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	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Vernal																
GA Ramp Expansion, 10,000 sq. yds. (existing airport)	2E+03	2003	Commission Approved SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$273,000.00	$30,333.00	$0.00	$303,333.00	46.50	47.20
Seal Coat & Crack Seal Runway 7/25, Taxiway, and GA Ramps	2E+03	2003	Commission Approved ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	49.35	51.57
Entitlement Project	2E+03	2004	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
Seal Coat & Crack Seal 16/34, and Commercial Service Ramp	2E+03	2005	Selected in ACIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$64,000.00	$16,000.00	$0.00	$80,000.00	49.35	50.09
Entitlement Project	2E+03	2006	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
Entitlement Project	2E+03	2007	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
			Sub Total: Vernal	$788,716.00	$788,716.00	$0.00	$0.00	$0.00	$0.00	$0.00	$520,188.00	$279,722.00	$0.00	$1,588,626.00		
Wendover																
DESIGN :Overlay, Groove, seal coat, & remark RW 12/30 (Sch. I), Seal Coat 8/26 (Sch II), Install RW distance remaining signs both RW; Install PAPI-4 RW 12 & lighting Vault improvements	2E+03	2002	ACIP Under Grant	$55,291.00	$0.00	$0.00	$55,291.00	$0.00	$0.00	$0.00	$2,754.00	$2,755.00	$0.00	$60,800.00	86.40	92.02
Groove Runway 12/30, Install Runway 12 PAPI, Install Runway 8/26 and 12/30 Distance-to-go signs, Acquire land for approaches (Tract 4B, 105.10 Acres).	2E+03	2002	Commission Approved ACIP	$1,044,709.00	$150,000.00	$894,709.00	$0.00	$0.00	$0.00	$0.00	$52,040.00	$52,040.00	$0.00	$1,148,789.00	83.70	86.63
Runway 8/26 Crack Seal, Seal Coat & Paint	2E+03	2002	Commission Approved SCIP	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$80,000.00	$20,000.00	$0.00	$100,000.00	52.85	54.70
Rehabilitate Runway 12/30, Including Porus Friction Course	2E+03	2002	Selected in ACIP	$850,000.00	$150,000.00	$700,000.00	$0.00	$0.00	$0.00	$0.00	$42,341.10	$42,341.10	$0.00	$934,682.21	86.40	92.02
Entitlement Project	2E+03	2003	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
Entitlement Project	2E+03	2004	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
Entitlement Project	2E+03	2005	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
Entitlement Project	2E+03	2006	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
Entitlement Project	2E+03	2007	Selected in ACIP	$150,000.00	$150,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$7,472.00	$7,472.00	$0.00	$164,944.00	0.00	0.00
			Sub Total: Wendover	$2,700,000.00	$1,050,000.00	$1,594,709.00	$55,291.00	$0.00	$0.00	$0.00	$214,495.10	$154,496.10	$0.00	$3,068,991.21		

Project Listing

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	Req. Year	Prog. Year	Phase	Federal Funds	GA Entitlement	GA Disc.	FAA Apportionment	Primary Entitlement	Primary Disc.	PFC	State Funds	Sponsor Funds	Other Funds	Total	National Priority Number	State Priority Number
Report Total:				~~22,785,303.50~~	21,444,733.50	29,495,425.40	38,880,142.60	11,859,110.99	21,095,891.00	$0.00	14,123,931.83	$9,954,084.43	$1,668,800.00	~~48,532,119.75~~		

122,785,303.50

148,532,119.75

Statewide Pedestrian and Bicycle Plan

An Element of the
Statewide Long Range Transportation Plan

Approved February 2001

Utah Department of Transportation
Office of Program Development - Statewide Planning Section

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STATEWIDE PEDESTRIAN AND BICYCLE PLAN

An Element of the
STATEWIDE LONG RANGE TRANSPORTATION PLAN
Office of Program Development - Statewide Planning Section

This plan is prepared in compliance with the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the Twenty-First Century (TEA-21) in 1998. Section 1025 directs State transportation agencies to develop transportation plans and programs, for all areas of the State, which will provide for the development of transportation facilities (including pedestrian walkways and bicycle transportation facilities) which will function as an intermodal State transportation system. The FHWA adopted final regulations in 1993, published as U. S. Code of Federal Regulations, Title 23, Part 450, which states, in part, that the Statewide Transportation Plan shall "contain, as an element, a plan for bicycle transportation, pedestrian walkways and trails which is appropriately interconnected with other modes."

This plan is an element of the Utah Department of Transportation Statewide Long Range Transportation Plan created to meet these requirements. The mission of the Utah Department of Transportation is to provide a quality, cost-effective transportation system that is safe, reliable, environmentally sensitive, and serves the needs of the traveling public, commerce and industry Many sources of information have been referenced and sound engineering and planning principles have been used in developing this plan. The plan may be updated from time to time as accepted standards and guidelines are revised or as local experiences, federal and state requirements, or transportation studies may dictate.

Complete implementation of the Statewide Pedestrian and Bicycle Plan is dependent upon the availability of funding. Adoption of the plan by the Utah Department of Transportation does not guarantee adequate financial resources to carry out the projects, nor can the Department commit the financial resources of other agencies or public bodies.

The implementation of good pedestrian facilities and bicycle facilities cannot guarantee the safety of the user or others around the user. This plan cannot ensure that walking and biking will be "safe" activities, free of all risks to the participants or motorists. Traffic speed and volume, traffic mix, actions of motorists, pedestrians and bicyclists, weather and lighting conditions, and the financial and institutional limitations of constructing and maintaining facilities all have an effect on the risks associated with using roadways, sidewalks, paths, and trails.

Following accepted standards and practices and looking for innovative ways to address hazards will provide facilities that help motorists, pedestrians, and bicyclists know what to expect, how to function in relation to each other, and can significantly improve the transportation environment for all users. The use of the word "safe" within this plan refers to a reasonable expectation that use of the facilities as intended will provide a good transportation experience. Key to improving the functional relationship between motorists, pedestrians, and bicyclists is providing educational opportunities for all transportation customers. It is incumbent upon the user to be pro-active in learning the skills needed to use facilities, to become familiar with the standards for facilities, to determine the best routes for the user's age, confidence and skill level, and to obey traffic laws. Assistance is available through the Utah Department of Transportation and other public agencies.

Approved by the Utah Department of Transportation Commission on February 9, 2001.

PART ONE - PLANNING PROCESS AND CONSIDERATIONS

I. PURPOSE OF THE PLAN - The *Statewide Pedestrian and Bicycle Plan* provides a framework to guide the Utah Department of Transportation (UDOT) and other public agencies in developing opportunities for walking and bicycling as clean, safe, convenient, cost-effective, and efficient modes of transportation.

The primary focus of the *Statewide Pedestrian and Bicycle Plan* is on meeting the needs of people walking and biking to work; walking and biking to access schools, businesses or community facilities; functioning within an intermodal transportation system (accessing transit, for example); or using State highways for tourism. Facilities that qualify for transportation funding must serve a valid transportation purpose by providing connections between origins and destinations, rather than being a recreational trail with no transportation function (such as a closed loop trail within a park or recreation area).

A secondary focus is providing connections to recreational trails. Many paths or trails used primarily for recreational purposes do have a transportation function or linkage to the State transportation system. A recreational path may serve a transportation function by providing bicycle commuting or other non-motorized transportation opportunities between rural towns. A recreational path having a transportation linkage would be one that provides an alternate route for tourists or recreationists who would otherwise walk or ride on a State highway.

II. GOALS AND OBJECTIVES OF THE PLAN

The goals of the *Statewide Pedestrian and Bicycle Plan* are:

1. To construct and maintain pedestrian facilities and bicycle facilities that meet current and expected needs for non-motorized travel and encourage increased non-motorized travel, including access to transit systems.

2. To provide for the safety of non-motorized and motorized State transportation system users through sound planning and engineering, good maintenance, and education.

The objectives for meeting these goals are:

- To identify major pedestrian and bicycle routes;
- To identify and address the existing needs of pedestrians and bicyclists;
- To anticipate and address the future needs of pedestrians and bicyclists;
- To identify and meet the needs of special populations, including the disabled, the economically disadvantaged, senior adults, children, non-English speaking residents and tourists, and others that are identified in the public involvement process;
- To involve the walking, biking, and motoring public in the planning process and to be responsive to the needs and input of public agencies, private businesses, and individuals;
- To identify facilities and programs needed to encourage walking and bicycling as safe, convenient and attractive alternatives to automobile travel, including sources of financial assistance to local, State and federal agencies for walking and biking facilities, studies, and programs;
- To identify opportunities for intermodal connections;
- To provide guidance to UDOT planning, design, construction, maintenance, operations, and safety personnel who develop, provide and maintain facilities for walking and bicycling;
- To facilitate better planning and coordination between UDOT, regional agencies,

and local transportation, recreation, and planning agencies, with the goals of better integrating major transportation corridors into communities and improving community design to provide walking and biking access;

- To serve as a resource to local communities desiring to plan and implement pedestrian and bicycle facilities;

- To identify and encourage legislative changes needed to improve the safety and function of walking and bicycling as transportation;

- To participate in educational assistance related to walking and biking practices among children, youth, teens, adults, senior adults and the disabled; for increasing driver awareness when pedestrians and bicyclists are present; and to assist public safety and law enforcement agencies through education and support;

- To provide information to residents and tourists using urban and rural highways, paths, and trails;

- To provide a framework for an ongoing program in support of walking and bicycling activities as modes of transportation.

III. NEED AND BASIS FOR THE PLAN

Injuries and Fatalities Related to Walking and Bicycling in the U. S. and Utah:

Approximately 4,900 pedestrians are killed in collisions with motor vehicles each year (U. S. Department of Transportation (U. S. DOT), 1999), which represents about 11.8 percent of all automobile-related deaths in the U. S. in 1999. The Surface Transportation Policy Project, Environmental Working Group report that senior citizens make up 13 percent of the population, but account for 22.1 percent of pedestrian deaths nationwide; that an average of 567 children ages 15 and under are killed every year while walking; and that 55 percent of pedestrian fatalities occur on neighborhood streets and local roads (*Mean Streets*, April 1997).

Bicyclists ages 15 and under accounted for 214 (28.5 percent) of bicyclist fatalities. The estimated cost of bicycle-related injuries and deaths for all ages is $8 billion (NHTSA, 1996). The Surface Transportation Policy Project, Environmental Working Group, and the Bicycle Federation of America released a joint study in May 1997 reporting that an average of 840 bicyclists are killed and 75,000 injured yearly (*Share the Road: Let's Make America Bicycle Friendly*, May 1997). This report quoted a bicyclist fatality rate of 4.1 per 1,000,000 residents in the Salt Lake City-Ogden area, based on 1986 - 1995 reported fatalities for metropolitan areas with one million or more people.

At the statewide level in Utah, bicyclist injury data is difficult to represent accurately, as only crashes involving motor vehicles are reported in the Department of Public Safety *Utah Crash Summary*. A number of injuries go unreported and do not include those that result from trying to avoid crashes with automobiles, bicycle-only crashes due to poor roadway conditions for bicyclists, or collisions between bicyclists and pedestrians. The *1999 Crash Summary* notes that one pedestrian or bicyclist is involved in a motor vehicle crash in Utah every 10 hours.

According to the *Utah Crash Summary*:

- In 1999, pedestrians were involved in 720 crashes with automobiles (1.4% of all crashes recorded), and 35 pedestrians were killed in motor vehicle crashes, accounting for 9.7% of Utah's traffic fatalities.

- In 1999, children between the ages of 0 and 14 years accounted for 274 (33.5%) of the pedestrians involved in motor vehicle crashes and 10 (or 26.3%) of the pedestrian fatalities.

- Bicycle-motor vehicle collisions accounted for 804 crashes (1.5% of all crashes) in 1999 with all six of the bicycle fatalities occurring at ages 15 and older.

Appendix F contains the more detailed reference data from the *1999 Utah Crash Summary*, compiled by the Utah Department of Public Safety from information provided by local law enforcement agencies and collected by the Utah Highway Safety Office and UDOT.

A plan and development program to improve the safety of travel by pedestrians, bicyclists and motorists can have a significant impact in reducing injuries and fatalities while increasing travel options.

Education and Safety

No records of helmet usage are kept for bicyclists as part of crash records in Utah. The brochure *CycleLogic: Use Your Head - Wear a Helmet!*, produced by the Utah Safety Council, Utah Highway Safety Office of DPS, the Salt Lake County Medical Society Auxiliary/Alliance, Utah Cycle, and Intermountain Health Care, notes that three out of four of the bicycle and skating related deaths nationwide involve head injury, in addition to thousands of serious head injuries. Bicycle helmets have been found to reduce the risk of serious head injury by 85 to 88 percent (NHTSA, 1996). NHTSA notes that, "Despite the fact that 70 to 80 percent of all fatal bicycle crashes involve head injuries, only 10 to 15 percent of all bicyclists wear bicycle helmets."

The Utah Department of Health conducted helmet usage surveillance to determine the local helmet usage for bicycling. A three-year, statewide observation was conducted (1994, 1995 and 1996) at nineteen elementary schools selected at random within three groupings by size of the student population. Over the three years, 3,092 elementary school-age bicyclists were observed, with 1,947 observed at school sites and 1,145 in neighborhoods near the school sites. The study reports that helmet use at the school sites increased from 3% in 1994 to 12% in 1996 and in neighborhood use from 3% in 1994 to 6% in 1996. Correct helmet usage (position of helmet and use of straps) was reported for 86% of those wearing helmets. The study also included observations of 490 junior high and high school-age bicyclists in 1994, 106 bicyclists in 1995 and 97 bicyclists in 1996. In the junior high and high school-age categories, only one bicyclist was observed wearing a helmet each year in 1994 and 1995, and two bicyclists wore helmets in 1996, representing less than 1% usage in this age-group overall.

The Health Department surveillance report indicates that, from 1990-1994, there were 790 hospitalizations in Utah for bicycle-related traumatic brain injuries. Of these, 72% were children and youth ages 19 and under. Of the 3,389 bicycle-related injuries reported by EMT reports, 70% of the injured were less than 19 years of age. The report also indicates that helmet usage among children in Utah is below the national average, with usage in rural areas being significantly lower than in urban areas. The report concluded that there was evidence that helmet intervention programs had increased helmet usage at some elementary schools, and that lack of awareness among parents on the potential for injury and the importance of helmet use

is the primary reason for parents' failure to purchase helmets for their children.

Since 1987, 15 states have adopted statewide, age-specific bicycle helmet laws (most covering bicyclists under age 16), and nine additional states have local laws requiring helmet use. Approximately one-third of the U.S. population is covered by a mandatory helmet law. NHTSA explains in its fact sheet for the *Safe & Sober Campaign* (December 1996) that bicycle-related head injuries are expensive to treat, because the effects of the injuries can endure throughout a lifetime. NHTSA indicates that every $10 bike helmet saves the U. S. $30 in direct health care costs and an additional $365 in societal costs: "In fact, if 85 percent of all child bicyclists wore helmets every time they rode a bicycle for a year, the lifetime medical cost savings would total $109 to $142 million."

Clearly, a high-profile campaign to increase voluntary helmet usage has the potential to reduce bicyclist fatalities and serious head injuries in Utah. The outstanding effectiveness of helmets in reducing potential fatalities or life-long debilitation warrants a strong encouragement effort by State and local agencies. Serious injuries, costs for medical care and property damage, and fatalities can, however, result from crashes involving bicyclists wearing helmets. It is important that cyclists learn safe cycling practices from an early age. Crash prevention**,** through good facilities and public education, is critical to improving the overall safety of walking, bicycling and driving. As a comment received from a Utah citizen stated, the primary focus should be on crash prevention (education about safe cycling practices), with secondary focus on damage control (helmet usage).

Walking and Biking - Usage and Demand:

Walking is an integral part of every trip made. We walk from home to car, car to home, parking areas to businesses, from homes to community activities, and from homes and businesses to transit stops; children walk to school or to play. Bicycling is a clean, economic, healthful, and enjoyable way to get from one place to another, and is increasing in popularity in many areas of the country for both transportation and recreation.

Communities that have aggressively pursued the goal of providing good facilities for biking and walking have seen a significant increase in these activities. Utah's climate is excellent for walking and biking for most of the year, with winter being the only season with limited usage due to snow conditions. Even many winter days are good for walking and bicycling, with dry roads and mild temperatures for outdoor physical activity. The southern Utah climate can be excellent for walking and biking year-round.

Walkways and bikeways between businesses, commercial centers, and activity centers within an urbanized area or rural town can almost eliminate the need for automobiles for short trips, lunch-hour excursions, and conducting business, and can reduce the need for short-term and employee parking facilities. Good transportation facilities legitimize walking and biking as modes of transportation by making these alternatives reliable and convenient and by reducing hazards that are sometimes associated with "sharing the road."

Some limited surveys of pedestrian and bicycle usage within metropolitan planning areas have been conducted in past years by the Wasatch Front Regional Council (WFRC), the Mountainland Association of Governments (MAG), and Salt Lake City. An origin and destination study conducted by the MAG in 1993 helped to identify high-level areas of pedestrian and bicycle travel within Utah County ("pedestrian friendly zones"). These zones occurred in accessible neighborhoods with sidewalks and trails, where residential and major destinations were in close proximity, and where population densities were comparatively high.

Walking made up the third largest trip category in Utah County, accounting for ten percent of all trips (single occupant vehicle and vehicle passenger trips were first and second). Bicycling accounted for four percent of all trips. Some areas had higher percentages; the MAG created an index for measuring pedestrian and bicycle access, ranging from one (low) to four (high). Low pedestrian friendliness occurred where population densities were low, destinations were isolated from people's homes, and few or no facilities such as sidewalks existed to accommodate non-motorized trips. The MAG's 1996 non-motorized plan for Utah Valley includes extensive development guidelines, design guidelines, information on traffic calming, and recommendations to improve the walking and biking friendliness of Utah Valley.

The Utah Valley Area Technical Study (UVATS) - as part of the MAG regional

planning process - conducted a bicycling survey in Utah County and compiled a report in 1974. Most of the response came from university students, which probably accounted for the high rate of bicycling determined from the survey. The numbers, however, are not the interesting part of this report. The comments received in the original 1974 report, including the enthusiasm for developing bike paths, the concerns for safety and driver awareness, and the recommendations of the UVATS report sound much like the comments received in 1997 - 23 years later.

The Wasatch Front Region Short Range Bicycle Plan (March 1987), prepared as an update to their 1976 Bicycle Plan, provided an analysis based on the 1980 Census. In 1980, over 1,000 people were commuting to work by bicycle in the Salt Lake area, with 48 percent having two major destinations: the Central Business District (CBD) and the University of Utah/Research Park area. The CBD fringe area accounted for 15 percent of cyclist destinations, with the remaining 37 percent of trips scattered through the valley. Forty percent of bicycle commuter trips began in the Avenues or University areas. The average cycling work travel distance was three miles.

Destinations for work trips by cyclists in the Ogden area had concentrations in the CBD (19 percent) and the Weber State College area (18 percent). Overall, bicycle work trips accounted for only 0.4 percent of all trips along the Wasatch Front. It was assumed that the number of bicycles on the streets for recreational purposes exceeded the number of bicycles used for work trips. A table of Work Trips by Transportation Mode showed 1,555 work trips by bicycle (0.4 percent), with an average travel time of 13.9 minutes, and 13,863 walking trips (3.5 percent of trips) with an average travel time of 9.9 minutes. Data on bicycle use in the Wasatch Front was supplemented with a regional inventory of bicycle facilities through a survey of 41 cities and counties (28 responded). Very few facilities existed (primarily Ogden and Salt Lake City); however, the Salt Lake City Transportation Office has worked aggressively since that time to construct an extensive on-road bike lane system within city limits in cooperation with the Salt Lake City Mayor's Bicycle Advisory Committee.

In 1993 and 1994, the WFRC conducted a Travel Model Recalibration Study, using data from a Home Interview Survey. The travel modes included walking, driver of a car/van/pick-up truck, passenger of a car/van/pick-up truck, UTA bus, other public transit or taxi, school bus, motorcycle or moped, bicycle, and other. Trips were analyzed by identifying the origin and destination trip purposes, mode, frequency, percent, cumulative frequency and cumulative percent. The results were inconclusive for walking and biking. The WFRC felt that inadequate data were available to accurately reflect non-motorized trips and bicycle and pedestrian friendliness.

The methodology report stated:

For the Salt Lake City and Ogden regions, no significant correlation between the friendliness index and non-motorized trip ends was found. This could be due to inadequate data for the levels 3 and 4 of the friendliness scale in the existing condition. Other variables were also investigated including population density (population per acreage) and employment density. No significant relationship was found here either. Therefore, before satisfactory relationships between non-motorized trip ends ratios and the friendliness indices are developed, an interim forecasting procedure can be used for the Salt Lake City and Ogden regions, using the non-motorized trip end ratios developed for the Provo/Orem region. For these two regions, the district level average non-motorized trip end ratios can be used as the base line conditions. For future forecasting, the zonal average non-motorized trip end ratios can be adjusted based on the change between the projected and existing pedestrian/bicycle friendliness, and the relationship between non-motorized trip end ratios and the friendliness index developed for the Provo/Orem region.

The report included data tables with district level average non-motorized trip end ratios for the Salt Lake City, Ogden and Provo/Orem regions in the base year.

Even with these studies, no reliable numbers exist to describe current participation or how much the demand would increase if good facilities were available for walking and biking. Much of our bicycle travel on rural highways is by out-of-state and international tourists using State highways to travel within Utah or across Utah as they travel across the U. S. Others are using highways as transportation between towns and recreational mountain-biking trail areas. These highway users would not be reached even by comprehensive surveys of Utah residents. It is nationally recognized that determining what demand would be, if well designed facilities were available, is difficult at best.

We do know that pedestrians and bicyclists are using Utah's highways for transportation, recreation and tourism, often without adequate facilities for those activities. Meeting the needs of these transportation system users is part of UDOT's mission. The needs of all transportation system users, including non-motorized, are balanced using information from the U.S. DOT manual *Selecting Roadway Design Treatments to Accommodate Bicycles*, 1994, and from the AASHTO *Guide for the Development of Bicycle Facilities*:

1. Bicycle facilities are needed by two types of bicyclists: A (advanced) and B/C (basic adult and child);
2. Every street on which bicycles are permitted to operate should be designed and maintained to accommodate shared use by bicycles and motor vehicles. Thus, all streets should include, at a minimum, the design treatments for group A cyclists;

3. A supply-driven approach for providing designated bicycle facilities should be considered, to encourage increased use by B/C riders;

4. Selecting design treatments to meet the needs of B/C cyclists involves two steps: a planning process to identify key travel corridors and/or routes along which access is important, and a design decision to identify the most appropriate facility treatment for a given route or corridor.

***The National Bicycling and Walking Study: Transportation Choices for a Changing America*, U. S. Department of Transportation Federal Highway Administration[1]:**

The Federal Highway Administration (FHWA) commissioned a study and report, as mandated by the 1991 U. S. Department of Transportation (U. S. DOT) Appropriations Act, to: 1) determine current levels of bicycling and walking and identify reasons why they are not better used as a means of transportation; 2) develop a plan for the increased use and enhanced safety of these modes and identify the resources necessary to implement and achieve this plan; 3) determine the full costs and benefits of promoting bicycling and walking in urban and suburban areas; 4) review and evaluate the success of promotion programs around the world to determine their applicability to the role required of the U. S. DOT to implement a successful program; and 5) develop an action plan, including timetable and budget, for implementation of such Federal transportation policy.

Participants in the study included the Federal Highway Administration (FHWA), the National Highway Traffic Safety Administration (NHTSA), the Federal Transit Administration (FTA), the Office of the Secretary of Transportation, State and local bicycle and pedestrian coordinators, and national bicycling and walking experts. Public input was solicited through a "Notice and Request for Comments," published in the February 1991 *Federal Register*. A 1991 interim report and 24 case studies addressing specific areas of research were published prior to the final report.

The study made several recommendations to state and local governments, including; organizing a bicycle and pedestrian program, planning and constructing need facilities, promoting bicycling and walking, education bicyclists, pedestrians, and the public, and enforcing laws and regulations. Although some of the recommendations made in the study are outside the mission of UDOT, providing safe multimodal transportation system is a primary responsibility of UDOT. UDOT will also continue to support other agencies in their efforts to address the other areas, such as education.

Existing and Needed Facilities and Current Practices - Impacts on Walking, Biking and Driving in Utah:

The lack of sufficient State funds available for safe sidewalk programs led the Utah Transportation Commission to establish pedestrian and bicycle projects as a priority for federal Transportation Enhancements funding. Many communities have outgrown the rural-standard highways constructed years ago and need sidewalks for children walking and riding bikes to school and waiting for school buses. Other communities cite a need for residents, including the elderly, who walk for exercise and/or to access community facilities.

Many towns have commercial and community facilities located within a good walking distance of homes; however, the necessity of walking in the right-of-way of highways where sidewalks are not available discourages people from leaving their cars at home. Some towns feel that better walking facilities would increase tourism opportunities and provide an economic benefit. Of the applications received for Transportation Enhancements, the clear majority have been for bicycle or pedestrian projects. Even so, few community sidewalk projects are large enough to meet the requirements for enhancements, so the number of applications for this program do not adequately reflect community needs for sidewalks.

UDOT does not currently have designated bikeways on most State roads. Bicycles are allowed to operate as vehicles on most State roads; however, bicyclists and motorists must share limited space in traffic lanes. Where available, bicyclists ride on paved shoulders, but may face such safety hazards as debris (silt, gravel, broken glass), deteriorating pavement edges, uneven concrete gutter/asphalt pavement joints, and unsafe storm water grates.

On rural and interstate highways, rumble strip design and location may present hazards or use valuable shoulder space, pushing bicycles toward the traffic lane or making the avoidance of shoulder hazards difficult. Bridges and underpasses built to older standards are sometimes too narrow to allow bicyclists to continue travel in the shoulder, requiring the bicyclists to move into congested or high-speed traffic lanes. Limited site distances due to terrain may contribute to the hazard of motorized vehicles overtaking slow-moving bicycles.

Bicyclists often express concern that drivers in Utah have a low level of awareness for bicycles. Although the Salt Lake City Mayor's Bicycle Advisory Committee worked with the Utah Department of Motor Vehicles to significantly revise the *Driver Handbook* as it relates to bicycling laws and driver responsibilities near cyclists, many drivers do not realize that bicyclists are permitted to operate on roadways with essentially the same rights and responsibilities as drivers of motorized vehicles. Improved transportation facilities and an educational campaign would increase the awareness of drivers.

An important point in the driver awareness campaign is that bicycles are not restricted to roads with bicycle lanes. With current funding and institutional constraints for making all roads bicycle-friendly, bike lanes are likely to develop along a few specific corridors without providing "door-to-door service." A comprehensive network of State and local roads, including those roads without designated biking facilities, is necessary for people to get where they want to go by bicycle. The identification of high-use corridors and the coordinated planning of State and community transportation facilities will be necessary to provide a viable network that would encourage greater bicycle use.

Some oppose the development of designated bike lanes and paths out of fear that they will be prevented from using other public roadways. Utah does, in fact, have a "side-path law" that requires cyclists to use a path where one is provided adjacent to, but separate from, the roadway [*U.S.C. 41-6-87. Operation of bicycle or moped on and use of roadway - Duties, prohibitions. (3)*]. Currently, only a handful of states still have a side-path law, and states are continuing to pursue the repeal of this law in recognition of bicycling as a transportation option and the conflicts that are created by mixing skilled cyclists with casual cyclists and pedestrians on shared use pathways.

Driver awareness and cyclist education can improve safety for bicyclists using wide curb lanes or sharing travel lanes with vehicles. Low-traffic roads and roads with wide lanes can be comfortably shared without bike lanes or other separate space. On roads with greater conflicts, facilities such as bike lanes - combined with an increase in driver awareness and cyclist education - can improve the safety of bicycling by reducing conflicts at intersections (such as vehicles turning right across the path of cyclists at intersections) by directing the flow of both cars and bicycles.

Bike lanes may also reduce common bicycling habits that endanger riders and motorists, such as riding against traffic, weaving in and out of traffic lanes to avoid hazards and parked cars, shifting between the roadway and sidewalk, and passing right-turning vehicles on the right (contrary to some arguments, bicyclists are not required to turn left from bike lanes). Observations in some communities have shown that automobiles use their designated space more efficiently when bicycles are provided their own space. Drivers are less likely to cross into adjacent travel lanes to pass bicycles if a visual space barrier exists to separate the two uses.

Under Utah law, bicyclists may use sidewalks unless posted by approved traffic control devices. This can be a useful option for young cyclists, but has its own risks. When communities recognize walking and bicycling as independent activities requiring their own space and build facilities accordingly, the safety and comfort-level of pedestrians and cyclists is improved.

The American Association of State Highway and Transportation Officials (AASHTO) recommends against using sidewalks as shared facilities for pedestrians and bicycles (*AASHTO Guide for the Development of Bicycle Facilities*, *1991*). Most sidewalks are not designed to facilitate both uses safely. Pedestrians feel threatened

by bicycles, and bicycles are impeded by pedestrians. Commuter cyclists are not likely to use sidewalks as bikeways due to slow travel and multiple conflicts.

Most sidewalks have travel occurring in both directions, which adds to conflicts. Motorists do not anticipate bicycles moving at faster speeds than pedestrians, especially when bicycles are traveling counter-flow to traffic. This is particularly hazardous at commercial driveway entrances, which frequently exist on urban State roads, as well as at roadway intersections primarily because motorists do not consistently yield to pedestrians and bicyclists on sidewalks. As mentioned previously, bicyclists are required under Utah law to use designated bikeways where a path is provided adjacent to, but separate from, the roadway. Requiring bicycles to use sidewalks by designating them as bikeways does not adequately serve commuters and serious cyclists, may reduce pedestrian use, and may increase the risk of injury and agency liability.

Transportation design and operations practices for State primary and major arterial highways should favor high-speed, high capacity design elements. Primary and major arterial facilities typically can be recognized as having no-access or limited access, and optimum signal spacing at approximately quarter, half, or mile spacing. These arterial facilities usually are comprised of multiple high-speed travel lanes, separated turn lanes and wide clear zones. Typically, such facilities are not conducive for bicycle and pedestrian activities unless suitable separated design can be incorporated. Urban area high-speed capacity corridors should be individually evaluated for pedestrian, bicycle and other alternate mode design incorporation consistent with a demand for local property access.

All planned and programmed corridor improvements on State highways should consider the incorporation and feasibility of sidewalks or walking paths, bicycle lanes, paved shoulders, and wide curb lanes for bicycling. The Utah Code states, “Pedestrian safety considerations shall be included in all state highway engineering and planning where pedestrian traffic would be a significant factor on all projects within the state or any of its political subdivisions” [27-14-6. *Pedestrian safety to be considered in highway planning*].

Local development codes and restrictions within developments may discourage walking when connections are not provided between offices, shopping, restaurants, and residential areas.

Although local governments control land use and development, increased coordination between State and regional transportation agencies and local planning agencies would facilitate better community design to improve walking, biking, and transit access. Long range planning for major transportation corridors should integrate the necessary major road networks into communities and, when possible, use designs that facilitate non-motorized transportation. UDOT can provide assistance to communities in assessing their walkability and addressing design issues through the U. S. DOT Pedestrian Safety Roadshow / Walkable Communities program.

BENEFITS OF GOOD WALKING AND BIKEWAY SYSTEMS:

• Walkways and bikeways provide facilities for those who may be "transportation disadvantaged" in an automobile-based society - i.e., those for whom driving or owning an automobile is not possible or desirable**.** An integrated and well-designed system of facilities offers equal access - available to children, adults, the elderly, people of limited financial means, and people with physical or other limitations and disabilities. UDOT cooperates with local agencies in an effort to provide a system that meets needs of pedestrians and bicyclists with varying skills and abilities.

• Good facilities increase the frequency of walking and biking travel. For example, in the Chicago area, several census zones containing linear trails average 15.6 percent of commuter trips by bicycle, compared to one percent for the region as a whole. Santa Barbara, California, has realized a 48 percent increase in overall bicycling since 1973, or a 19 percent increase when the rate is adjusted to reflect population growth. Streets in Santa Barbara where painted bike lanes have been added have experienced a 47 percent increase in bicycle trips; streets without bike lanes have shown a one percent decrease in bicycle trips.

• Walkways and bikeways can reduce the need for short vehicle trips, reduce impacts to roadways, and reduce the need for parking facilities. Many short trips to work, shop, or access community facilities can be accomplished without cars where facilities enable people to walk or bike. Decreased automobile use relieves urban congestion, reduces the demand for new or expanded roads, and reduces wear and maintenance needs on roadways. The Federal Highway Administration (FHWA) estimates annual costs of congestion at $100 billion. Providing facilities for pedestrians and bicyclists currently using traffic lanes reduces "side friction" and improves efficiency in traffic lanes. Safety and comfort of all transportation system users - motorists, pedestrians, and bicyclists - is improved. Parking areas can accommodate eight bicycles in the space required for one car. The cost of constructing a new parking garage is estimated at $14,000 per parking space (UTA, 1997).

• Improving highways for bicycles can increase safety for all travelers. *The National Bicycling and Walking Study* notes that the addition of four-foot wide paved shoulders to rural, two-lane roads has been shown to reduce run-off-road, head-on, and sideswipe motor vehicle crashes by 29 percent (49 percent reduction with eight-foot wide shoulders). The study indicates that increased bicycle traffic increases motorist awareness and may reinforce safety as bicyclists become more accepted as users of the transportation system. The study cites several examples in which cities that have aggressively worked to increase bicycling reported significant decreases in bicycle-automobile crashes.

• A *Pro Bike News* article on the May 1997 *Share the Road* report (by the Bicycle Federation of America, the Surface Transportation Policy Project, and the Environmental Working Group) noted a preliminary analysis issued by NHTSA reports that bicycle fatalities fell by 12 percent and injuries by five percent in 1996 - the year

ISTEA-increased investments were greatest.[2] *Pro Bike News* also reported that Davis, California, has been aggressive in providing bicycling facilities, education and enforcement, resulting in 20 percent of trips in Davis being made by bicycle, with zero bicyclist fatalities occurring over the previous ten years.

• Walkways and bikeways make communities more livable. They reestablish connections, providing balance and a human-scale approach to meeting community transportation needs. They lend themselves well to landscaping, benches, and transit access. They promote a sense of "connectedness" within the community and may discourage personal and property crimes as usage and presence of people increase. Storefront businesses are easily accessed by walking and biking and may realize economic benefits from walkways and bikeways[3]. A number of communities throughout the country have found that use of bicycle law enforcement patrols has a positive impact on the incidence of personal and property crime and increases the comfort level associated with walking in urban areas.

• Walkways and bikeways provide an alternative to automobile travel and lessen the need for wider, higher capacity, and higher speed roads that can divide a community and contribute to disconnected or poorly connected, sprawling developments. While improving traffic flows to serve regional transportation needs, some roadway improvements result in decreased access for non-motorized transportation and have the unintended effect of dividing communities. Good planning helps to appropriately integrate needed high-volume corridors in a way that facilitates, rather than impedes, walking and biking opportunities.

• Walkways and bikeways can encourage tourism[4]. Driving and parking in crowded, unfamiliar urban areas is less attractive than walking between lodging, retail areas and restaurants, entertainment and historic centers, and community facilities. Bicycling is a popular tourist activity in the scenic, rural areas of Utah. Numerous national and state parks, forests, recreation areas and monuments attract people who enjoy such outdoor activities as hiking, walking, and bicycling.

• Walking and biking are pollution-free. Reducing auto trips improves air quality and water quality. Salt Lake Valley and Utah Valley are working to achieve and maintain compliance with national air quality standards. *The National Bicycling and Walking Study* (Case Study No. 15 *The Environmental Benefits of Bicycling and Walking*, 1992) estimates that biking and walking in the U. S. in 1991 were equivalent to between 7.6 and 28.1 billion motor vehicle miles, saving 370 to 1,340 milliongallons of gasoline and 4.4 to 16.3 million metric tons of exhaust emission air pollution.

• Walking and biking usually replace short distance motor vehicle trips, which the study notes are the least fuel-efficient and generate the most pollution per mile traveled. Under the 1990 Clean Air Act Amendments, strategies are required within non-attainment areas to reduce ozone and carbon monoxide emissions. Walking and biking are approved Transportation Control Measures (TCMs) for reaching attainment. Construction and non-construction efforts to increase walking and biking

transportation may qualify under ISTEA for Congestion Mitigation and Air Quality (CMAQ) funds. Bicycle racks were added to 435 of the 530 UTA buses in 1996 using CMAQ and UTA Section 9 (now Section 5307) transit funds, providing service along the Wasatch Front from Payson to Brigham City (only ski buses, trolley cars and flex-trans buses were exempted).

- Particulate emissions and polluting fluids, such as oil, accumulate on roadway surfaces. Storm water runoff from roadways and parking lots carry these pollutants to surface waters or to soil surfaces where they may percolate into groundwater systems. Replacing a percentage of auto travel with non-polluting walking and bicycling can reduce these non-point source pollutants to our water resources.

- Walking and biking encourage a sense of stewardship for the land. In tourism areas with recreational walking and biking, interpretive facilities have beneficial environmental, educational, and social impacts. These may include signs or other displays on the local ecology, historic value of the area, and the ethics of courteous co-existence with other users. The addition of well-designed walking and bicycling facilities can often be accomplished with minimal impacts to the surrounding environment. Providing paths within sensitive areas such as stream corridors can reduce impacts by controlling access and give damaged areas a chance to recover.

- The Centers for Disease Control and Prevention has determined that moderate levels of exercise can have significant benefits to overall health and the prevention of disease. This is supported by *Physical Activity and Health: A Report of the Surgeon General, July 1996*. Walking is one of the most popular forms of exercise in the nation, and is often recommended for those who cannot participate in more strenuous exercise. Walking and biking allow many people to meet their transportation needs while exercising to improve and maintain their physical health and emotional well-being.

- Communities have realized an increase in property values with the incorporation of walking and bicycling facilities - including bike lanes, sidewalks and trail systems. Access to trails is a desirable amenity in residential areas. In a 1994 study by American Lives (a research firm serving the real estate industry), home buyers ranked trail access as third among 39 crucial factors in their home-purchasing

decisions.[5] Only "community designs that deliver low traffic and quiet streets" and "lots of natural, open space" were ranked higher.

• Business parks often include more on-site open space and trail systems to improve access for their employees and customers and to encourage exercising as part of employee wellness programs. Some communities use traffic-calming techniques to improve the environment for pedestrians on local roads. These communities have found improved "pedestrian-friendly zones" to be of greater value to their residents and businesses than road improvements to move traffic more rapidly.

NATIONAL LEGISLATION, REGULATIONS AND POLICIES:

Several national policy statements regarding the provision of walking and bicycling facilities have been issued by Congress, the U. S. Department of Transportation (DOT), the Federal Highway Administration (FHWA), and by the American Association of State Transportation and Highway Officials (AASHTO). These have "a direct bearing on the nature of the vision and actions to be put forth by State DOT and MPO [Metropolitan Planning Organization] bicycle and pedestrian plan elements."[6]

National Transportation Policy - statement issued by the U. S. Department of Transportation in 1990 titled, *Moving America*, states:

> *It is Federal transportation policy to: Promote increased use of bicycling, and encourage planners and engineers to accommodate bicycle and pedestrian needs in designing transportation facilities for urban and suburban areas.*

Federal Highway Administration Bicycle and Pedestrian Policy - stated by Federal Highway Administrator, Thomas Larson, in 1991 and in a May 1991 FHWA Policy Memo referring to the National Transportation Policy statement:

> *The FHWA is committed to working with the States to encourage their (non-motorized modes) use and make them safer.*

May 1991 policy memo:

> *I strongly support this important element of the National Transportation Policy and request the full support of the field offices in cooperation with the State highway and transportation agencies to achieve these important objectives.*

Bicyclists and pedestrians are legitimate users of the transportation system, and FHWA has a responsibility to provide for their transportation needs.

I am specifically asking that the field offices ensure that full consideration is given to the safe accommodation of bicycle and pedestrian traffic on all Federal-aid highway projects.

Federal Highway Administrator, Rodney E. Slater, issued an updated bicycle and pedestrian policy statement in May 1994, that included the statement:

The ISTEA requires the development of statewide and metropolitan transportation plans. The inclusion of bicycle and pedestrian elements in these transportation plans is essential.

Policy on Bicycle and Pedestrian Projects - FHWA Memorandum, May 1991, and references above are the basis for FHWA-RD-92-073, *Selecting Roadway Design Treatments to Accommodate Bicycles*, which states that the two basic policy alternatives for the Federal policy goal for bicycle use are:

(1) to accommodate current bicycle use and/or (2) to increase the level of use. A review of recent policy statements by Congress, the U. S. Department of Transportation, and the Federal Highway Administration makes it clear that the Federal policy goal for bicycling is to accommodate current use and to encourage increased use, while enhancing safety.

AASHTO Bicycle Policy - the *Guide to the Development of Bicycle Facilities* includes the following AASHTO policy statement:

To varying extent, bicycles will be ridden on all highways where they are permitted. All new highways, except those where bicyclists will be legally prohibited, should be designed and constructed under the assumption that they will be used by bicyclists.

Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 - Sections 1024 and 1025 amended Section 134 and 135, respectively, of Title 23, United States Code (U.S.C.), to require that States and Metropolitan Planning Organizations develop transportation plans and transportation improvement programs which consider and include, as appropriate, bicycle and pedestrian projects and programs:

Such plans and programs shall provide for the development of transportation facilities (including pedestrian walkways and bicycle transportation facilities) which will function as...(1024) an intermodal transportation system for the State, the metropolitan areas, and the Nation...(1025) an intermodal State transportation system...Each State shall undertake a continuous transportation

planning process which shall, at a minimum, consider the following: ...(3) Strategies for incorporating bicycle transportation facilities and pedestrian walkways in projects where appropriate throughout the State.

Code of Federal Regulations - Final regulations implementing these requirements were published in the *Federal Register* on October 28, 1993, by the FHWA and the Federal Transit Administration (FTA) as 23 CFR Part 450:

> 23 CFR 450.214, "Statewide transportation plan," states that the Statewide transportation plan shall *(3) Contain, as an element, a plan for bicycle transportation, pedestrian walkways and trails which is appropriately interconnected with other modes*;
>
> 23 CFR 450.216, "Statewide transportation improvement program (STIP)" states: *In addition the STIP shall: (6) Contain all capital and non-capital transportation projects (including transportation enhancements, Federal lands highway projects, trails projects, pedestrian walkways, and bicycle transportation facilities), or identified phases of transportation projects*....
>
> 23 CFR 450.322, "Metropolitan transportation planning process: Transportation plan," states: *In addition the plan shall: (2) Identify adopted congestion management strategies including, as appropriate, traffic operations, ridesharing, pedestrian and bicycle facilities...and (3) Identify pedestrian walkway and bicycle transportation facilities in accordance with 23 U.S.C. 217(g)*.
>
> 23 CFR 450.324, "Transportation Improvement Program: General," states: *(f) The TIP shall include: (1) All transportation projects, or identified phases of a project, (including pedestrian walkways, bicycle transportation facilities and transportation enhancement projects) within the metropolitan area proposed for funding under title 23, U.S.C.,*....

The Transportation Equity Act for the Twenty-First Century (TEA-21), June 1998, amended and built upon provisions of ISTEA to continue the integration of bicycling and walking into transportation and enhancing the ability of communities to invest in safe and convenient walking and bicycling travel. Section 1202 states that:

> *Bicyclists and pedestrians shall be given due consideration in the planning process...and that bicycle facilities and pedestrian walkways shall be considered, where appropriate, in conjunction with all new construction and reconstruction of transportation facilities except where bicycle use and walking are not permitted.*

Other TEA-21 changes in policy and program provisions are described in the FHWA publication *A Summary: Bicycle and Pedestrian Provisions of the Federal-Aid Program, as Amended by the Transportation Equity Act for the 21st Century*[7]. Some of the provisions of particular note are:

> *Each State is required to fund a Bicycle and Pedestrian Coordinator position in its State Department of Transportation to promote and facilitate the increased use of nonmotorized transportation, including developing facilities for the use of pedestrians and bicyclists and public educational, promotional, and safety programs for using such facilities.*
>
> *TEA-21 defines a bicycle transportation facility as "a new or improved lane, path, or shoulder for use by bicyclists and a traffic control device, shelter, or parking facility for bicycles. The definition of a pedestrian includes not only a person traveling by foot but also "any mobility impaired person using a wheelchair."*
>
> *Transportation plans and projects shall also consider safety and contiguous routes for bicyclists and pedestrians.*
>
> *The Secretary shall not approve any project or take any regulatory action that will result in the severance of an existing major route, or have an adverse impact on the safety of nonmotorized transportation traffic and light motorcycles, unless such project or regulatory action provides for a reasonable alternate route or such a route already exists.*
>
> *When a highway bridge deck - on which bicyclists are permitted or may operate at each end of the bridge - is being replaced or rehabilitated with Federal funds, safe accommodation of bicycles is required unless the Secretary of Transportation determines that this cannot be done at a reasonable cost.*
>
> *When improvements to at-grade railway-highway crossings are being considered, bicycle safety must be taken into account.*

The transportation planning process is carried out with the active and ongoing involvement of the public, affected public agencies, and transportation providers.

TEA-21 also directs FHWA to develop facility design guidance on the various approaches to accommodating bicycles and pedestrian travel, in cooperation with AASHTO, the Institute of Transportation Engineers, and other interested organizations, by December 1999. The guidance will include recommendations on amending and updating AASHTO policies relating to highway and street design standards to accommodate bicyclists and pedestrians.

IV. STATEWIDE PLANNING ACTIVITIES AND ISSUES

The Utah Department of Transportation (UDOT) is the agency which houses the Pedestrian and Bicycle Planning Program for the State of Utah. ISTEA mandates that State transportation agencies designate a pedestrian/bicycle coordinator. Prior to 1995, this mandate was fulfilled within UDOT by designating part-time pedestrian and bicycle planning activities as a portion of the workload for a full-time staff member. In September 1995, UDOT designated a full-time, senior level, professional planning position of Bicycle and Pedestrian Planner. References from the U. S. Code and the Code of Federal Regulations for statewide pedestrian and bicycle planning can be found within this document in Section III. Need and Basis for the Plan.

The *Statewide Pedestrian and Bicycle Plan* was developed as an element of the *Statewide Long Range Transportation Plan (SLRP)*, which incorporates the *Statewide Pedestrian and Bicycle Plan* by reference. The *SLRP* text includes a brief discussion of non-motorized transportation and references the development of the *Statewide Pedestrian and Bicycle Plan*.

The *Statewide Long Range Transportation Plan* identifies the goals for Utah's non-motorized transportation system as providing the opportunity for a safe, quality pedestrian and bicycle transportation experience that will serve the needs of the traveling public, including:

1. **Develop a statewide pedestrian and bicycle friendly transportation network that can be used for transportation trips.**

2. **Provide facilities, amenities, and awareness programs to increase the total number of trips made by walking and bicycling.**

3. **Reduce the percentage of pedestrians and bicyclists killed or injured in traffic crashes.**

In addition to the *Statewide Pedestrian and Bicycle Plan* document, a map of bicycling suitability characteristics for rural State highways is being planned by UDOT to assist bicyclists in determining a route suitable for their interests and bicycling skills. This map, while intended for assistance to touring cyclists, will also provide a beginning point for a more detailed inventory of bicycling conditions that can assist in identifying highways that need improvements to accommodate bicycles. An inventory of pedestrian facilities is being planned and will be expanded through additional input from local agencies, school districts, UDOT Regions and citizens. These inventories are supplemental to the *Statewide Pedestrian and Bicycle Plan*.

Facilities Considerations - The *Statewide Pedestrian and Bicycle Plan* is the first plan UDOT has published specific to walking and biking facilities. It has, therefore, been developed with flexibility, emphasizing guidelines and recommendations rather than strict standards. The plan provides guidance to UDOT in planning, designing, constructing or reconstructing, operating, and maintaining facilities within the State transportation system, with the goals of making the State system accessible to walking and bicycling as transportation modes and accommodating recreational and tourism users of State highways.

Special Needs - Special needs identified for further development include design considerations for: 1) mountainous terrain, canyons, or other topographically constrained areas, beyond design considerations of the *AASHTO Guide for the Development of Bicycle Facilities*; 2) sensitive environments, beyond the *AASHTO Guide*; 3) pavement loading and structures, to reduce costs while maintaining safety and long-term viability; and 4) adaptive hand-cyclists (three-wheeled bikes adapted for use by the disabled).

Two other needs that warrant further research include 5) railroad crossings and other access issues for non-motorized trails, and 6) use of bike lanes, roadways and sidewalks by in-line skaters. Due to liability concerns, the railroads in Utah are hesitant to allow at-grade crossings of their lines by trails, which could hinder completion of some regional trails systems or increase costs if grade separations are obligatory. Highway crossings of rail-trails or other non-motorized systems is also a difficult issue. In addition, the question of whether to restrict or allow use of on-road bike lanes or pedestrian sidewalks by in-line skaters being debated nationwide.

Use of the AASHTO Guide - UDOT has adopted the *AASHTO Guide for the Development of Bicycle Facilities* for use in the design, implementation, and maintenance of the transportation system. New construction, reconstruction, and maintenance activities on the state system and on state and federally funded projects are to be done in accordance with the most recently adopted edition of the *Guide.*

Design exceptions to the recommendations of the AASHTO *Guide* need to be processed and approved in the same manner as is done for exceptions to the *AASHTO Policy on Geometric Design of Highway and Streets.* UDOT also encourages local agencies to use and adhere to the recommendations of the *AASHTO Guide* for facilities within their jurisdiction, in order to provide continuity in the overall transportation system.

Safety and Liability Issues - Concerns have been expressed, by UDOT and local agency staff, about liability associated with providing bicycling facilities or encouraging use of roadways by bicyclists through signing and designating routes. Providing biking facilities does carry a certain responsibility, as does providing roadways for motorized vehicles and pedestrian facilities. Following accepted standards and guidelines, including those of the *AASHTO Guide*, can improve the safety of bicycle facilities and reduce risk of liability claims.

As with other transportation facilities, construction or designation of facilities is an invitation to use those facilities and does carry a commitment for ongoing maintenance and repair.

New and upgraded facilities designed to reduce pedestrian-bicyclist-motorist conflicts will improve the safety and efficiency of the entire transportation system. Improved safety means fewer crashes and injuries. The Pedestrian and Bicycle Planning office enlisted the participation of UDOT Loss Control and State of Utah Department of Risk Management throughout the pedestrian/bicycle planning process.

Non-Facilities Considerations - The UDOT statewide pedestrian and bicycle planning program also addresses safety and use issues that do not involve design, construction and maintenance activities.

These include:

- motorist awareness of pedestrians, pedestrian conveyances, and bicyclists;
- education on laws, and tips for safe travel behavior for pedestrians, bicyclists, parents of child bicyclists, and motorists;
  increased awareness about bicycle helmet usage, with the goals of promoting and achieving helmet use;
- legislative changes to facilitate walking and biking and to increase safety;
- operations, such as special events permits and pedestrian/bicycle use of interstate highways;
- enforcement of laws (information and guidance for State and local public safety and law enforcement agencies).

Other State of Utah agencies that participate in elements of planning, implementing, or improving the safety of walking and biking include:

- the Department of Public Safety, Highway Safety Office and Highway Patrol;
- the Department of Health, Violence and Injury Prevention Program;
- the Department of Natural Resources, Parks and Recreation Division;
- the Department of Environmental Quality, Air Quality Division;
- the Office of Education; and
- the Governor's Council on Physical Fitness and Health.

Other participants are:

- the Utah Safety Council, which participates in committee work addressing policies, legislation, and education and makes publications available to the general public; and
- Operation Lifesaver, which educates the public nationwide about railroad crossing safety for motorists, pedestrians and bicyclists.

EVALUATING THE EFFECTIVENESS OF THE PLAN

Considerable guidance is provided for the statewide planning and implementation processes in the U. S. DOT publication *Bicycle and Pedestrian Planning Under ISTEA*, June 1994, referenced in various sections of this plan. The state will continue to evaluate the *Statewide Pedestrian and Bicycle Plan,* and UDOT's success in implementing projects and programs, in reference to this guidance to address Utah's walking and biking needs.

Evaluation tools may include:

- identifying other corridors on current walking and biking activities;

- periodically evaluating increases in walking and biking and changes in the numbers of crashes, injuries and fatalities;

- evaluating changes in miles of sidewalks, paths, bike lanes, wide curb lanes, storm drains retrofitted, railroad crossing improvements, sidewalk continuity between origins and destinations, and bicycle parking areas provided; and

- reviewing public feedback through comment cards, questionnaires, email, letters, phone calls, and personal contacts.

DOCUMENTS RELATED TO THE *Statewide Pedestrian and Bicycle Plan:*

The *Statewide Pedestrian and Bicycle Plan* is a part of the *Statewide Long Range Transportation Plan (SLRP)*. The *SLRP* outlines UDOT's 20-year program for accomplishing a multi-modal transportation system through planning, design, construction, maintenance, and operations, and is updated every few years. Included in the SLRP is a Highway Needs Assessment that is updated annually. The Highway Needs Assessment includes capacity projects and major construction projects, but does not currently include sidewalks or bicycle facilities unless they are part of these larger projects.

Projects identified for concept development and programming of funds are found in the *Statewide Transportation Improvement Program (STIP)*, which is updated annually. This is a five-year program, with three years of funded projects.

Documents that are referred to and incorporated into the *Statewide Pedestrian and Bicycle Plan* by reference include the most currently approved versions of:

- *Manual on Uniform Traffic Control Devices (MUTCD)*,
- *AASHTO Guide for the Development of Bicycle Facilities*,
- U. S. DOT's *Selecting Roadway Design Treatments to Accommodate Bicycles,*
- Utah Code,
- AASHTO *Policy on Geometric Design of Highways and Streets,*
- UDOT's *Manual and Specifications on School Crossing Zones (Supplement to Part VII of the MUTCD),*
- *UDOT Metric Standard Drawings,* and
- Pedestrian and Bicycle Plan and Map elements approved by the Wasatch Front Regional Council, the Mountainland Association of Governments, and the Cache Metropolitan Planning Organization.

The authority for preparing the plan is derived from the federal Intermodal Surface Transportation Efficiency Act of 1991, as amended by the Transportation Equity Act of the Twenty-First Century, 1998. The Utah Code provides the legislative framework at the State level by identifying the rights and responsibilities of pedestrians, bicyclists, and motorists in relation to each other (see Appendix C).

PUBLIC INVOLVEMENT *for the Statewide Pedestrian and Bicycle Plan*

Utah is one of five states selected nationwide to pilot a new initiative in transportation development. Under this initiative, UDOT is committed to approach transportation decision-making based on pro-active communication with the public and all transportation stakeholders throughout the planning, design, construction, and maintenance phases of projects and programming.

To achieve pro-active public involvement at all stages of planning and programming, UDOT is committed to:

- Promote an active role for the public and all transportation stakeholders in developing transportation plans, programs, and projects from the early stages of the planning process through detailed project development; construction and maintenance;
- Promote the shared obligation of the public, all transportation stakeholders and decision makers to define goals and objectives for the State transportation system, to identify transportation and related problems, to develop alternatives to address the problems, and to evaluate alternatives on the basis of collaboratively identified criteria;
- Ensure that the public is actively involved in developing public involvement procedures themselves in ways that go beyond just commenting on drafts;
- Aggressively seek to identify and involve affected and interested persons, including those traditionally under served by existing transportation systems and facilities;
- Use combinations of different public involvement techniques designed to meet the diverse needs of the general public;
- Participate in outreach, training, and technical assistance programs, using information provided by Federal agencies on effective public involvement procedures;
- Include effective public involvement in the annual statewide planning work program;
- Provide a periodic review of the public involvement process effectiveness to ensure the process provides full and open access to everyone;
- Revise the process as necessary.

The public involvement process for developing and implementing the *Statewide Pedestrian and Bicycle Plan* has included a number of activities to inform, educate, and solicit input to the plan document and map. This included use of printed informational fliers, comment post cards, user questionnaires, annual open houses for Statewide Planning, Transportation Fairs, articles for newsletters, press releases, media and press contacts resulting in newspaper articles, use of the UDOT Internet web site, promoting recognition through the Governor's Office (Bike Month), meeting with local agencies, presentations to special interest groups and professional groups, and direct public contact through special events, such as the UTA Bike Bonanza.

A representative listing of public involvement tools and activities for the *Statewide Pedestrian and Bicycle Plan* development process is included in Appendix E. Continuing efforts include an analysis and report on the questionnaire submittals and continued efforts to identify needs and concerns for future plan updates, implementation of the plan, and general customer service. Questionnaires and comment cards are accepted on an ongoing basis to assist in monitoring program needs and problems.

V. REGIONAL AND LOCAL PLANNING, ADVOCACY, AND TRANSIT

REGIONAL METROPOLITAN PLANNING:

Metropolitan Planning Organizations (MPOs) are designated to do regional transportation planning for metropolitan areas, including congestion management, conformity with air quality regulations, long range facility planning, and programming of funds. Any urbanized area with a population exceeding 200,000 is also defined as a Transportation Management Area. The three metropolitan planning organizations (see map) currently established within Utah include:

- Mountainland Association of Governments - for the Utah County metropolitan area;
- Wasatch Front Regional Council - for the Salt Lake, Davis, and Weber County (Ogden) metropolitan areas; and
- Cache MPO - for the Logan metropolitan area.

ISTEA requires MPOs to develop pedestrian and bicycle elements of their transportation plans. U. S. Code and CFR references on MPO requirements under ISTEA 1991, can be found in Section IV. of this document. Requirements to prepare a long range plan and Transportation Improvement Plan to provide for the development, integrated management and operation of a multi-modal transportation system were carried through in Section 1202 of TEA-21.

The following regional activities are planned, in process, or recently completed:

The Mountainland Association of Governments(MAG) approved the *Utah Valley Non-Motorized Transportation System* plan. The plan was developed with guidance from a committee representing public agencies, city trails committees, and advocates. The comprehensive plan document includes a description of existing conditions and travel behavior, Citizen Advisory Committee vision and goals, a description of a grade-separated trails program, trail location and construction standards, standards for pedestrian friendly zones, bicycle roadway improvements, traffic calming techniques, ADA compliance, signs and maps, and trail benefits and safety. The plan focuses on development of a grade-separated trail system and includes maps of proposed regional (intercommunity) connections, and addresses on-road systems.

The Wasatch Front Regional Council(WFRC) began an update of the Salt Lake and Southern Davis County Regional Bikeways Map and Plan update in 1996. The WFRC conducted meetings between public agency representatives from Point-of-the-Mountain to Farmington. The WFRC and UDOT combined efforts to meet individually with each city and Salt Lake and Davis County representatives to identify regional routes to connect communities along the Wasatch Front. The Ogden area bicycle plan update was initiated in late 1997. A draft bikeways map for each area was approved by the Council as an element of the Regional Long Range Transportation Plan in late 1998.

The WFRC's mapping efforts included small-area meetings, with several adjoining communities in each meeting, to work out connection issues. State roads are shown on the WFRC map at the request of local communities and must be evaluated by UDOT Region Traffic Engineers for their respective areas. The WFRC plans to further refine the map with input from the local communities and display overlays of existing facilities, five-year plan facilities, and 20-year plan facilities.

The Cache Metropolitan Planning Organization(CMPO) established a Bicycle and Pedestrian Plan Advisory Committee and hired a consultant team to assist the committee in the development of a Bicycle and Pedestrian Plan, as part of the CMPO's Long Range Transportation Plan update.

Pedestrian and Bicycle Plan and Map elements approved by MPOs are incorporated into the *Statewide Pedestrian and Bicycle Plan* by reference.

LOCAL PLANNING AND ADVOCACY - A number of cities and counties within Utah have pursued some level of effort for incorporating walking and bicycling into their communities. Three primary areas of focus are:

1) Tourism and Economic Development - primarily promotional activities to attract tourism travel by bicyclists, through travel brochures or Bicycle Utah membership;
2) Engineering, Transportation, or Public Works Departments - for on-road bicycle lanes and pedestrian facilities;
3) Parks and Recreation or Planning Departments - for recreational trails.

Local efforts, which are at varied stages from one community to another, include promoting tourism-related activities; creating citizen or technical committees; incorporating routes into transportation or park master plans; developing focus groups; applying for ISTEA or CMAQ funds; or constructing facilities. Local government projects have received federal funds from UDOT under the Transportation Enhancements program, or through the MPOs under the Congestion Mitigation and Air Quality program, both of which are components of ISTEA 1991 and TEA-21.

Funds have also been made available through the State trails program approved by the Legislature and through the non-motorized trail fund that has been a component of both ISTEA and TEA-21. Both funds are administered by the Department of Natural Resources.

TRANSIT PLANNING FOR WALKING AND BIKING ACCESS - The Utah Transit Authority(UTA) has been the primary agency responsible for promoting transportation alternatives and for planning intermodal connections for walking-transit and biking-transit trips. In 1996, UTA equipped 435 of its 530 buses with bicycle racks in two phases. CMAQ funds paid for the first phase, with UTA providing the matching funds. Because the racks were available only on limited routes, UTA added racks to their remaining buses, providing service along the Wasatch Front from Payson (at the southern end of the service area) to Brigham City (at the northern end of the service area) using UTA Section 9 (5307) transit funds. The 95 buses that were exempted from the program were ski buses, trolley cars, and flex-trans buses.

Each on-bus bike rack carries two bicycles. UTA conducts a one-day count of weekday bike boardings each month and one weekend per month. In August 1997, UTA carried 7,720 bikes, with a typical weekday usage of 315 bikes. In January 1998, when low numbers were anticipated due to snow and cold, UTA carried 150 bikes per day. Usage has continued to increase. Summer 1998 figures showed a weekday use of 659 bikes per day in June, 805 bikes per day in July and 949 per day in August. Late fall showed weekday bike boardings as 835 per day in November and 949 per day in December. Weekend counts are considerably lower.

The high weekday counts for on-bus bike boardings indicates that bike-transit

travel is a viable year-round commuter transportation mode for northern Utahns. Bicycle parking will be incorporated into light-rail station plans; including serpentine racks at all locations and a few covered parking units at key transfer points. Additional covered units may be added in the future, based on demand and available funding. Access to light-rail cars for bicycles is allowed. Bus stops that block bicycle lanes and bus pull-outs that have buses crossing bike lanes create conflicts between biking and transit. For this reason, routes that have no or few buses are desirable for less experienced riders. However, for bicycle commuters that need access to transit, on-road bicycle-compatible connections to transit routes are important. Future commuter rail plans should also consider bicycle access as well as pedestrian and ADA access.

VI. RECOMMENDATIONS: Needs Assessment, Planning, Implementation

A. PEDESTRIAN INVENTORY

UDOT's Pedestrian and Bicycle Planning office is compiling and will periodically update a comprehensive inventory to assess pedestrian planning needs. Identified pedestrian needs should be included in Corridor Plans for State highways.

The inventory includes existing facilities, areas with sidewalk discontinuity, and areas needing new sidewalks, rehabilitation or replacement of existing sidewalks, or retrofitting for greater accessibility. Sources of information include cities and counties, UDOT Regions, and comments received as input to the Statewide Planning process and to the Statewide Pedestrian and Bicycle Planning process. Some cities have begun inventorying sidewalk availability and sidewalk needs. Other sources of information for the inventory include school districts (which must identify routes for children walking and biking to school as part of each school's transportation safety plan), the UDOT walking and biking questionnaire and comment cards used for input to the plan, funding applications for pedestrian projects, and information compiled through direct contacts between the Regions and Pedestrian/Bicycle Planner and individual communities.

The questionnaire and comment card developed for public input to the *Statewide Pedestrian and Bicycle Plan* have generated numerous bicycle-related responses, but very little information on pedestrian needs. A particular challenge with pedestrians is that they have little or no organizational structure as a group. People do not always think of walking as an activity with special needs; everyone is a pedestrian, and yet walkers are not "organized" (contrasted with local and national bicycle clubs]; and walkers do not have an industry representing their interests (contrasted with the bicycle shop industry).

The State Pedestrian/Bicycle Coordinators from across the U. S., coordinators from local agencies with active programs nationwide, and private industry representatives are members of the Association of Pedestrian and Bicycle Professionals (APBP). This networking group was organized in recent years as a resource for professionals working to further the interests of pedestrians and cyclists within their communities. The U. S. DOT also provides technical support. However, efforts to identify pedestrian constituents and their needs must occur within the individual states.

UDOT will work to develop more useful approaches and tools to involve pedestrians in the inventory and planning process. In 1999, funding was made available through FHWA for training State pedestrian/bicycle coordinators for the U. S. DOT Pedestrian Safety Roadshow (Walkability Workshop); UDOT participated in this training. This program is designed to provide tools to individual cities and towns for developing walkable communities. Resource materials and planning assistance are available to communities through UDOT and FHWA. FHWA will also develop pedestrian facility guidance under TEA-21.

B. BICYCLING INVENTORY

The highway bicycling suitability characteristics map being developed for touring cyclists using rural highways will serve as the beginning point for a detailed inventory of needed improvements for safe bicycling on Utah highways. The suitability map, in order to be a usable scale for tourists, must be very generalized. Sections of shoulder width, for example, may not be entirely continuous. Roads with shoulders may have squeeze points where structure widths do not reflect highway shoulders. UDOT inventory and classification data for State highways are sources of information on highway characteristics. As with the Pedestrian Inventory, local agencies, UDOT Regions, School Districts, funding applications, and public input will be sources of information on bicycle facility needs. The bicycling inventory will be an attachment to the *Statewide Pedestrian and Bicycle Plan* and will be updated on an ongoing basis. Identified bicycle facility needs should be included in Corridor Plans for State highways.

C. FUNDING

Funding is a serious issue for successful implementation of the *Statewide Pedestrian and Bicycle Plan* and for regional and local plans, as well. Improvements for walking and biking must compete, in many instances, with other transportation projects that may take higher priority. UDOT Region offices expressed concern during the development of the statewide plan about funding shortfalls and the ability to take on not only new construction requirements, but additional maintenance requirements to better accommodate pedestrians and bicycles.

Traditional sources of funding include federal appropriations through various transportation funding categories, State legislative appropriations for transportation programs, and local government funds. Nontraditional funding sources (private donations, public/private partnerships) should be further explored for benefit/cost with respect to revenues generated, cost of administering the program, feasibility and acceptability, need for enabling legislation, and other considerations.

For the purpose of funding, walking and biking facilities may be grouped into two categories:

1) Facilities that serve a valid transportation purpose by providing a connection between origins and destinations (for example, connect neighborhoods, shopping areas, industrial areas, employment and service areas, schools, recreational areas, transit stops, connect with other trails or facilities, or provide tourism transportation). Trails funded through programs requiring FHWA or FTA approval, except for those listed below in paragraph 2, must be included in statewide plans and, if within a metropolitan planning area, MPO plans. These must be for non-motorized use only, except for motorized wheelchairs, maintenance vehicles, and snowmobiles where allowed by State or local regulations. Unless a facility serves a significant regional function, pedestrian and bicycle projects may be able to be grouped together for funding purposes.

2) Recreational trails with no transportation function (for example, a closed loop trail within a park or recreation area). Recreational trails without a transportation function may be funded through the National Recreational Trails Fund Act (NRTFA). Projects to be funded through the NRTFA have requirements related to the Statewide Comprehensive Outdoor Recreation Plan (SCORP). Questions on funding recreational trails with NRTFA funds should be referred to the State Trails Coordinator in the Utah Department of Natural Resources, Parks and Recreation Division.

An informational questionnaire used for public input during the development of the *Statewide Pedestrian and Bicycle Plan* included a question to ascertain the public's attitudes about paying for accommodations for pedestrians and bicyclists and their opinions on suitable funding mechanisms. Most of the comments received applied to bicycling. Some funding options suggested through citizen comments were:

- Use gasoline taxes generated by motor vehicles; use transportation funds already made available for highways; designate a percentage of federal highway funds for bicycling facilities; construct facilities while constructing, upgrading or maintaining highways. Justifications offered by commenters: most bicyclists also drive cars and pay these taxes; cars create congestion and should help pay for measures such as bicycle

lanes and paths that reduce congestion; cars create air pollution and should pay for solutions for non-polluting transportation alternatives.

- Place a surcharge or tax on the sales of bicycles and accessories to help fund bicycle facilities. Justification offered by commenters: cyclists should help pay for facilities designed specifically for their use.

- Charge a registration fee for bicycles, similar to vehicle registration, and use the revenue generated to pay for bicycle facilities. Justification offered by commenters included the "user fee" as for taxing the sale of bicycles, above.

- Sponsor special cycling rallies, bike-to-work days or other special events with registrations that generate revenue to be used for bicycle facilities.

- Cycling and walking have benefits for everyone (participants or not), so costs should be borne from the general fund.

- Save the cost of public-funded, special-design bicycle facilities and use wide curb lanes; educate bicyclists to become competent to use the roadways.

Most comments received during public review of the draft plan opposed taxes or fees charged to bicyclists. Commenters felt that these charges would discourage people from using bicycling as an alternative to automobiles. They also felt these charges would impact families, as well as economically disadvantaged adults who bicycle as an affordable option to owning a car, possibly in violation of Title 6 of the Civil Rights Act. Some felt that cyclists are already making a personal sacrifice of time and convenience by choosing an alternative commuting mode and should not be further penalized. Some indicated that bicycles do not cause damage to roadways the way cars and trucks do and should not bear the same costs. A number of people pointed out that most bicyclists also drive cars and pay gas taxes. It was also pointed out that pedestrians, as a user group, are not charged a special tax for sidewalks and that bicyclists also should not be charged a special tax.

FEDERAL FUNDING SOURCES:

All the major funding programs created under ISTEA and available under TEA-21 include walking and bicycling facilities and programs as eligible activities.[8] TEA-21 also created some new funding opportunities.[9] Most federally funded projects and activities require a 20 percent State or local match, with some exceptions.

National Highway System (NHS) - Under ISTEA, Congress authorized expenditures for a proposed National Highway System, including 42,000 miles of Interstate highways and 113,000 miles of roads identified by States based on importance to the national and regional economy and their connectivity. Bicycle transportation facilities and pedestrian walkways are eligible activities for NHS funds under two categories: 1) facilities that are an incidental part of a larger NHS project (within the right-of-way of the highway and constructed at the same time as the larger project), and 2) facilities that are constructed adjacent to an NHS route but are built as an independent project. NHS funds are administered by UDOT. They can also be transferred to the Surface Transportation Program by the State.

Surface Transportation Program (STP) - Congress authorized a broadly defined STP program, giving States the flexibility to invest in a variety of transportation activities. These activities include highways, transit, transportation demand management, and safety. Pedestrian walkways and bicycle transportation facilities are specifically listed as eligible activities, and include the provision of sidewalks and crosswalks, bike lanes, trails, bicycle parking, and modification of public sidewalks to comply with the Americans with Disabilities Act, as well as non-construction projects (maps, brochures, public service announcements) related to safe walking and biking and the salaries of the ISTEA-mandated position of State Pedestrian and Bicycle Coordinator. A description of surface transportation funding sources available to UDOT and an explanation of the planning and programming (appropriation of funds) processes are included in the *Statewide Long Range Transportation Plan*, *1995*.

Transportation Enhancement(TE) - Ten percent of STP funds must be allocated to a range of specific types of projects known as Transportation Enhancements. Three of these eligible activities are pedestrian and bicycle related. The first category allows projects that provide physical facilities, they may be bicycle-only, pedestrian-only or shared use, the second allows conversion of abandoned railroad corridors to trails and the third allows safety and education programs for pedestrians and bicyclists that are completed within a specific time period. A local match of 20 percent is required for pedestrian and bicycle transportation projects and programs using Utah's Transportation Enhancement funds.

The Transportation Enhancements program has been the primary source of funding bicycle and combined bicycle/pedestrian projects administered through UDOT to date, with approximately two-thirds of the funds available under ISTEA programmed for these activities. Project sponsors in Utah must be a legal government entity and may be a State, federal or local agency. Other participants may be co-sponsors. In Utah, most Transportation Enhancement projects have been selected by a committee process. In Utah, locally sponsored Transportation Enhancement projects are reviewed by a committee which makes a recommendation to the Utah Transportation Commission. The UTC makes the final determination of

which projects will be programmed, including in-house projects such as sidewalks, pedestrian overpasses, and rest area enhancements.

Hazard Elimination and Railway-Highway Crossing Program funds make up another ten percent of each State's STP funds and include pedestrian and bicycle safety issues. Each State must implement a hazard elimination program to identify and correct locations that constitute a danger to motorists, bicyclists and pedestrians. Funds may be used to survey hazardous locations, complete projects on any publicly owned pedestrian or bicycle pathway or trail, or any safety-related traffic calming measure. Improvements to railway-highway crossings "shall take into account bicycle safety."

State and Community Highway Safety (402) Grants - These federal funds pay for safety and education programs related to walking and biking. Examples are bicycle helmet promotions, safety education materials and programs, and maps to assist bicyclists in using highways safely. Use of these funds was expanded under TEA-21 to allow payment for air-time for public education media campaigns. In Utah, these funds are administered through the Highway Safety Office, Utah Department of Public Safety.

Congestion Mitigation and Air Quality Program (CMAQ) - CMAQ funds were a new category of funding created by ISTEA. The purpose of these funds is to assist metropolitan areas in attaining clean air standards set under the Clean Air Act Amendments. Use of these funds is limited to projects that benefit air quality within non-attainment and transportation management areas (TMAs).

The first CMAQ guidance issued by FHWA in 1992 specifically listed pedestrian and bicycle projects as eligible activities, both in their own right, and as part of the list of transportation control measures in the State Implementation Plan, as required by the Clean Air Act. CMAQ funds are administered through the Wasatch Front Regional Council, which is responsible for urbanized areas extending from Ogden through the Salt Lake Valley to the northern Utah County line, and through the Mountainland Association of Governments which is responsible for urbanized areas of Utah County. The Cache Metropolitan Planning Organization will handle CMAQ funds for the Logan urbanized area, if and when that becomes necessary. It is anticipated that a new MPO will be formed for the St. George area once the 2000 Census numbers are in. It will be responsible for CMAQ there, if air quality becomes an issue.

National Recreational Trails Fund - This funding source for the development of non-motorized and motorized recreational trails is administered by the Parks and Recreation Division, Utah Department of Natural Resources. Funds are subject to annual appropriation by Congress.

Federal Lands Highway Program improvements to roads, highways and parkways include provisions for pedestrians and bicyclists as eligible activities. The appropriate Federal Land Agency or Tribal government determines priority for funding under this program.

Scenic Byways - The State of Utah has a State Scenic Byways program that combined the UDOT Scenic Highways and other federal land agency scenic byway programs. In 1996, the U. S. Secretary of Transportation designated the first All-American Roads and National Scenic Byways. The National Scenic Byways program is administered by FHWA. In order for State Scenic Byways to qualify for federal funds to construct facilities, the byway corridor must have a locally-driven Corridor Management Plan identifying the byway's intrinsic values and how the corridor will be managed to preserve those values. These may include archaeological quality, cultural quality, historic quality, natural quality, recreational quality or scenic quality. States may apply for federal Scenic Byway Funds to prepare a Corridor Management Plan.

Pedestrian and bicycle facilities developed as part of State and National Scenic Byways are eligible for use of these funds. Congress authorized $30 million nationwide for the first three years of ISTEA in support of the development of State and National Scenic Byways. Project applications are submitted through Utah's Scenic Byways Committee, which is chaired by the Utah Travel Council. Federal funds are passed through UDOT to local byways committees by reimbursement agreements. FHWA selects projects from applications submitted by State Scenic Byway Committees.

Job Access and Reverse Commute Grants support projects designed to transport welfare recipients and eligible low-income individuals to and from employment and are available to support bicycle-related services that accomplish this.

Federal Transit Program funding allows improved pedestrian and bicycle access to transit facilities and vehicles to be made available through the Urbanized Area Formula Grants, Capital Investment Grants and Loans, and Formula Program for Other than Urbanized Area funds. TEA-21 created a Transit Enhancement program with a one percent set-aside of Urbanized Area Formula Grant funds for enhancing coordination between mass transit and other modes, including pedestrian access and walkways, bicycle access, bicycle storage facilities, and equipment for transporting bicycles on mass transportation vehicles.

UTAH STATE LEGISLATIVE APPROPRIATIONS are made through the following:

Centennial Non-motorized Paths and Trail Crossings - This program, approved by the 1997 Utah State Legislature, is administered through the Department of Natural Resources, Parks and Recreation Division. The purpose is to provide for safe and continuous pedestrian, bicycle, and other human-powered and equestrian transportation paths and trails and to provide access across highways and other impediments. The funds are available to the State, a county or a municipality, with no more than 50 percent of the funds going to one project in one year (an exception allowed with unanimous vote of the council). A 50 percent match is required. An appropriation of $250,000 from the General Fund was included for fiscal year 1997-98; the 1998 Legislature appropriated $100,000 for fiscal year 1998-99.

Safe Sidewalk Program - Communities may request funding through the UDOT Regions for “safe sidewalk” funds made available by State appropriations for construction of sidewalks on State roads. Appropriations in recent years have been approximately $500,000 statewide. These funds are paid to the municipalities by UDOT upon approval of an application and require a 25 percent local match. Each Region office accepts applications in the spring and assigns points to each proposal based on identified criteria. The emphasis of the safe sidewalk program is to provide sidewalks used by children walking to school. Funds for selected projects are available after July 1.

D. LEGISLATIVE CHANGES

Possible changes in the Utah Code that may be helpful to the promotion of safe and convenient opportunities for walking and bicycling may include the following:

1) Repeal or amend the "side-path law.” Only a handful of states still have a mandatory requirement that bicyclists use a path when provided parallel to a roadway, and other states are continuing to pursue repeal of this law. This is a lingering law that reflects an older section of the Uniform Vehicle Code that was removed from this code a number of years ago. Repealing the law benefits commuter cyclists by allowing them to use roadways and avoid conflicts on shared use pathways that reduce their efficiency in commuting or long-distance rides.

Shared use paths often follow circuitous routes, require multiple stops at crossings, and are used by pedestrians and less experienced cyclists, including children with unpredictable riding patterns. Commuters and other cyclists skilled in riding with traffic prefer a more direct route, the capability of crossing intersections with the flow of traffic, and a travel-way unobstructed by slower-moving pedestrians,

in-line skaters and casual cyclists. They also find it safer to travel with more predictable traffic flows and avoid conflicts at intersections between two-way paths and highways, which are comparable to conflicts caused by wrong-way riding.

Under Utah Code, bicyclists are permitted to use roadways unless the use is restricted. Where a side-path has been built to provide connections, for example, between a neighborhood and school or shopping area, there may be no change in roadway conditions that affects a cyclist already using the road. Requiring the cyclist to leave the road and use a side-path for a short distance (typically requiring that traffic be crossed twice to access and then leave the path) does not serve any purpose and may create additional conflicts between cyclists and motorized traffic. Use of a side-path, where safety conditions warrant it, could be required by posting traffic control signs.

2) Clarify that bicyclists may legally operate within a shoulder on a local road or State highway, and that bicyclists using a shoulder must travel in the direction of traffic. Utah law states that bicyclists on the roadway have the same rights and responsibilities as the drivers of motor vehicles. Bicyclists using roadways travel in the direction of traffic and may share traffic lanes with drivers of motorized vehicles. Bicyclists traveling at less than the speed of traffic are required to ride to the far right side of the "roadway," except to turn left or to avoid unsafe riding conditions.

As the traditional definition of "roadway" excludes shoulders and sidewalks, some states have interpreted this to mean that cyclists operating on the shoulder are not legally operating as “vehicles on the roadway” and have found cyclists at fault in crashes. Informal opinions from the Utah State Attorney General’s Office and State Risk Management (1997), provided in response to inquiries by the Bicycle/Pedestrian Planner, indicate that Utah statutes do not prohibit use of the shoulder and include language that seems to imply that motorists should expect to encounter cyclists on shoulders. The Attorney General’s representatives recommended clarifying the language. It is also important to add to the statutes a requirement that bicyclists operating in the shoulder must travel in the direction of traffic. Wrong-way riding is a common and extremely dangerous practice to the wrong-way rider. Bicyclists legally traveling with traffic are also placed in jeopardy when encountering a wrong-way rider in traffic conditions.

In urban and suburban areas, paved shoulders may provide additional space for bicyclists to operate when traffic lanes are not wide enough for a motor vehicle and a bicycle to travel next to each other in the same lane and where designated bike lanes are not available. On rural highways, paved shoulders provide a space for slower-moving bicycles, reducing hazards caused by speed differences between bicycles and motor vehicles. Paved shoulders available for bicyclists also increase safe passing opportunities, particularly on two-lane highways.

While a clarification is in order to specifically allow use of the shoulder, it is not advisable that bicyclists be required to ride within shoulders. It is important that bicyclists be allowed to use their best judgment in determining whether to use shoulders. Shoulder widths often vary along a highway and may not be consistently adequate for bicycle travel. Unfavorable conditions may be more likely to occur within shoulder areas, such as cars pulling into the shoulder from commercial driveways to enter traffic, vehicles parking in the shoulder due to emergencies, trash receptacles placed in a shoulder for municipal collection, stop-and-go vehicle movements for trash collection or mail delivery, silt or debris build-up, unfavorable pavement conditions, snow storage after plowing, or pedestrians using the shoulder in the absence of sidewalks or constructed paths. A bicyclist is safest when traveling a straight, predictable path, which may only be possible by traveling in the unobstructed traffic lane. At intersections, shoulders are often used as turn-lanes. Bicyclists are safest merging into through-traffic to cross the intersection and must do so where the shoulder becomes a designated right-turn lane.

3) Mandatory bike helmet law for children and youth. Utah does not have a helmet law. The most widely quoted statistics are that three-fourths of all bicycle-related deaths result from head injuries, and that bike helmets reduce the risk of serious head injury by 85% (see Part I of this plan, Section IV. Need and Basis for the Plan - Injuries and Fatalities Related to Walking and Bicycling in the U.S. and Utah). Since 1987, 15 states have adopted statewide, age-specific bicycle helmet laws (most covering bicyclists under age 16), and nine additional states have local laws requiring helmet use. Approximately one-third of the U.S. population is covered by a mandatory helmet law.

Utah counties and municipalities may enact their own mandatory helmet laws; however, most state highways (particularly in urban areas) go through multiple jurisdictions. A cyclist would have to know and comply with the laws for all local entities along the bikeway, making enforcement by county, city and State officers difficult between jurisdictions. UDOT has incorporated a requirement into special event permits that cyclists wear certified bicycle helmets. This, however, covers only a very small number of cyclists and applies only to use of State highways.

4) Use of rear bicycle lamp. Current Utah Code requires bicycles to be equipped with a head lamp and certain reflectors when operated under after dark. Reflectors, while essential, provide limited notice to motorists overtaking a bicyclist and work only when light is directly reflected. A rear lamp that emits a steady or flashing red light significantly increases the visibility of cyclists and provides motorists with greater notice when overtaking a cyclist or approaching from an indirect angle that would reduce the light directly hitting reflectors on a bicycle. Flashing LED lamps, commonly available in retail stores and catalogs that sell safety equipment for bicyclists, are also used by many walkers and joggers. Due to their popularity, these lamps provide instant recognition to motorists. These small lamps are designed such that they will not be confused with flashing lights used by public safety or emergency

services vehicles. A clarification in the Utah Code (a bicycle may be equipped with a rear lamp that emits a steady or flashing red signal) is recommended.

5) Prohibit use of head-phones while bicycling on roadways or shoulders. Use of head-phones prevents bicyclists from receiving audible cues in traffic. An exception for a single ear-phone (does not cover both ears) used for communication purposes between cyclists in a group should be an exception if a head-phone prohibition is approved.

Citizen comments for a suggested change that was evaluated:

6) Liability insurance for bicyclists - Several comments were submitted, during the Pedestrian/Bicycle Plan development process, citing a need for liability insurance for bicyclists, indicating that motorists must cover their own costs for damaged vehicles when a crash was caused by a bicyclist. Insurance needs could also be a consideration where a cyclist causes damage to another bike (which can be a significant financial investment) or personal injury to another cyclist or pedestrian.

Although this was identified as an issue, requiring insurance specifically for bicycling would be difficult to accomplish because of the structure and classification of insurance types used nationally.[10] The national system identifies 20 classes of insurance, and bicycling is not one of the categories. Automobile insurance applies specifically to damage caused by use of autos. Home owners' or renters' insurance has been the "catch-all" policy to cover other types of liability. In the case of a minor, liability falls to the parent. Lack of insurance does not absolve someone of financial responsibility, although collecting for damages may require legal action, and the ability of the party to pay is not assured. Also, enforcement would be difficult as there are no licensing or registration requirements for use of a bicycle, and users are often children.

PART TWO - UDOT POLICY ISSUES FOR DESIGN, CONSTRUCTION, MAINTENANCE, AND OPERATIONS

VII. POLICY ISSUES for Location, Classification, Design and Maintenance of Pedestrian and Bicycle Facilities and Providing Non-motorized Access:

Development of the *Statewide Pedestrian and Bicycle Plan* began in 1995. The statewide pedestrian and bicycle planning process identified a number of issues that have served as the basis for discussions in policy development within UDOT, with the goals of accommodating and encouraging walking and biking as transportation modes within the State, regional and local transportation systems.

The following policy issues were included in the *Draft Statewide Pedestrian and Bicycle Plan*, published for public review in July 1997, to be evaluated over time for the possible adoption of policies within UDOT or for use in developing standard procedures for planning, identification of facility needs, project concept development, environmental review, design, construction, and maintenance of State transportation facilities. These issues, in combination with input from citizens and the professional expertise of UDOT staff, have provided guidance for ensuring the development of a viable pedestrian and bicycle transportation system.

Projects should consider potential impacts to pedestrian and bicycle connections shown in approved local and regional master plans and evaluate reasonable accommodations that can be incorporated into the project, where the master plan has:

- considered options and feasibility,
- included consultation with UDOT in the planning process, and
- demonstrates a financial commitment to construct local walkways and bikeways connecting to the requested project.

Requested accommodations beyond the reasonable scope of a state transportation project may be incorporated with funding participation by the local agency.

A. Walkways (also see - C. Combined Pedestrian/Bicycle Shared Use Paths)

A.01 - All corridor studies, environmental assessments, and other transportation studies should include an evaluation of pedestrian needs within the corridor or project boundary and impacts of proposed transportation facilities to pedestrians. The solutions used to address transportation needs in the corridor should be context sensitive taking into consideration community needs, capacity requirements, historical and archaeological issues, and the natural and built environment. Where feasible, these facilities should be incorporated in approved State, federal, regional or local transportation master plans or parks and recreation master plans.

A.02 - Early planning, concept development and design phases of all projects should consider the existing and future needs of pedestrians and the potential for increasing pedestrian travel by providing sidewalks and pedestrian at-grade crossings (cross-walks) and grade-separated crossings (bridges, tunnels). Cross-walk design should meet or exceed minimum standards; placement of cross-walks, particularly mid-block or locations without traffic signals, should consider pedestrian safety and convenience. Special needs and interests of each community should be considered in an effort to provide for pedestrian-friendly design.

A.03 - The design of new highways and highways being widened or upgraded should consider the need for pedestrian facilities where reasonably possible, both technically and financially. Construction of the sidewalks may be phased over time if demand doesn't exist or if resolving right-of-way issues or construction costs would unreasonably delay construction of needed road improvements. Effort should be made to provide access to transit and schools, and to avoid discontinuous sections of sidewalk that do not connect origin and destination points.

A.04 - When acquiring property for new, expanded or upgraded roadways or when disposing of property, sufficient right-of-way for sidewalks should be reserved. Need may be determined by observed pedestrian usage, existing or transitional land use, proposed land use as shown on an approved plan, existing or proposed location of public or private schools or recreation areas, location of the road within town or city limits or between communities in close proximity, or other criteria determined to be suitable for a given location.

A.05 - If sidewalks are available along both sides of a roadway, sidewalks should be placed on both sides of structures unless a crossing is provided to safely access the sidewalk and then return to the other side of the structure. Sidewalks along both sides of structures are preferred where cost and space are not prohibitive.

A.06 - Designation of pedestrian sidewalks as bikeways is strongly discouraged. Sidewalks, which are designed primarily for pedestrians, should not be considered an acceptable substitute for needed bicycle facilities. However, bicycle use on sidewalks is permitted under State law and may provide an option for some users on roads that have not been improved for bicycle access.

Option: Municipalities may, under State law, close sidewalks to bicycle travel within limited areas, by ordinance, if a capacity or safety concern supports such an action. Requiring bicyclists to walk their bikes on sidewalks within identified areas may provide cities with an alternative to prohibiting bicycles on sidewalks.

A.07 - Pedestrian cross-walks that are part of a sidewalk system may be used by bicyclists; they may be required to dismount and walk their bikes through the cross-walk where posted and must yield to pedestrians. (Note: This provides a crossing option, but does not preclude the option of making a left turn from the right-hand traffic lane, where merging to the left-turn lane would be hazardous due to traffic conditions or skill-level of rider.) Bicyclists using at-grade or grade-separated crossings must ride at a speed compatible with pedestrians and take appropriate precautions to avoid collisions with pedestrians and slower bicyclists under provisions of the Utah Code.

A.08 - It is the intent of the Utah Department of Transportation to meet the needs of all transportation users, regardless of physical limitations. Sidewalks will be constructed for accessibility in compliance with the ADA to the extent reasonably possible, given the topography of the highway. All sidewalks that can be negotiated by pedestrian vehicles for the disabled should be upgraded with appropriate curb cuts and turning radii needed for special access (sharp turns should be avoided).

A.09 - When placing a sidewalk, the need for curb, gutter and other drainage improvements should be considered to prevent flooding and freezing water on sidewalks.

A.10 - Curb cuts and ramps should be designed and located to easily facilitate straight-line access from walkways to crosswalks and provide adequate direction and detectability for sight-impaired pedestrians. Walkways should have a continuous level surface that does not require a wheelchair occupant to cross the slope of a ramp or driveway perpendicular to his or her direction of travel.

B. Bikeways (also see - C. Combined Pedestrian/Bicycle Shared Use Paths)

B.01 - All corridor studies, environmental assessments, and other transportation studies should include an evaluation of bicycling needs within the corridor or project boundary and potential impacts and benefits of proposed transportation facilities to bicyclists.

B.02 - Early planning, concept development and design phases of all projects should consider the existing and future needs of bicyclists and the potential for increasing bicycle travel by providing shoulders, bike lanes, wide curb lanes and at-grade (cross-walks) or grade-separated crossings (bridges, tunnels). Special needs and interests of each community should be considered in an effort to provide for bicycle-friendly design.

B. 03 - Bikeways may include Bicycle Paths[also called Class I bikeway], Bicycle Lanes [also called Class II bikeway], Shared Roadway Bicycle Routes (including wide curb lanes) [also called Class III roadway], or Combined Pedestrian/Bicycle Shared Use Paths[also called Class II Shared Use Path] meeting accepted design guidelines. The *AASHTO Guide for the Development of Bicycle Facilities* and the *MUTCD* provide the preferred design criteria. Additional information on design is found within this plan under sections *Design Guidelines for Bicycle Facilities* and *Construction, Paving and Structures*. Local government projects or those sponsored by other State or federal agencies should be encouraged to meet AASHTO guidelines.

Design Exceptions may be requested through the design review process. Combined pedestrian/bicycle shared use paths not meeting established minimum widths specified by the *AASHTO Guide* (version in effect at the time of project design) may be shown on the *Statewide Pedestrian and Bicycle Plan* map as multi-use trails rather than bikeways, unless the impact of design exceptions can be mitigated through signs, pavement markings, or other devices to adequately inform users and allow the user to maintain control. Approved trail standards from state or federal recreation and lands agencies may be considered for use where AASHTO guidelines are not possible or desired.

Bicyclists using the *Statewide Pedestrian and Bicycle Plan* map or bicycling facilities should feel confident that the facilities they use are consistent and meet their expectations based on the information given in the plan and map. For example, it may be preferable to designate a connecting section of roadway as a Class III bikeway rather than have a Class II segment that does not meet rider and motorist expectations. Inconsistencies and surprises to the bicyclist and motorist, particularly in high-traffic, urbanized areas, can be hazardous and must be avoided. For these reasons, Design Exceptions that adversely affect the safety of the facility, without reasonable justification, are strongly discouraged.

B.04 - B.03 does not preclude the use of Design Exceptions when they can be effectively mitigated, reduce significant environmental impacts, or where the inability to use Design Exceptions would prevent construction of a needed project. Inability to meet AASHTO guidelines should not automatically disqualify a project from funding. Many exceptions can be effectively mitigated, and users can be educated about the conditions of the bikeway or trail. Consideration should be given for the value of the project for transportation and safety, as compared to existing conditions without the project. Before deciding to reject a project requiring design exceptions, consultation with the Pedestrian/Bicycle Planner is recommended.

B.05 - Contra-flow paths should not be used adjacent to a motorized travel lane unless a minimum adequate separation is provided, as addressed in the *AASHTO Guide*. The preferred method is at least five feet separation between a two-way bike path and the edge of the traveled way for motor vehicles. If this method cannot be achieved without great difficulty or prohibitive expense, adequate vertical barriers should be employed. Standard curbs are generally not satisfactory for this purpose. Jersey barrier, if used should have an additional railing installed on the top to provide fall-over protection of at least 42 inches above the surface of the path. Its use should be avoided, if possible, because Jersey barrier may interfere with sweeping, maintenance, and snowplow operations, and can obstruct visibility of both cyclists and motorists at driveways and intersections. Design Exceptions should be justified and mitigation outlined.

B.06 - If one-way bicycle lanes are provided on each side of a roadway, the lanes should be continued across structures (a two-way path should not be placed on one side of a structure unless a safe crossing is provided to access the path before the structure and to cross back over at the end of the structure). Two-way bike paths that merge into on-road bike lanes should also provide a safe crossing point for accessing the bike lane on the other side of the road to reduce the incidence of wrong-direction riding against the flow of traffic. Directional arrows should be painted on the bike lane where it joins the path (directional signs may direct cyclists across road to access the appropriate bike lane). Signs should note the end of the bike path.

B.07 - On designated bike routes or routes where frequent bicycle travel occurs and traffic signals are activated by buried induction loops or similar vehicle detectors, the Region Traffic Engineer may evaluate the need for bicycle-sensitive detectors.

C. Combined Pedestrian/Bicycle Shared Use Paths (also see - Sections A. Walkways and B. Bikeways)

C.01 - The impacts of designating combined pedestrian/bicycle paths in high-use urban corridors should be carefully considered, as shared use paths have many problems similar to bicycling on sidewalks and wrong-direction riding on roads. These include conflicts between pedestrians and cyclists and the increased likelihood of motorists not anticipating bicyclists coming from an unexpected direction, particularly where frequent commercial driveways exist and at roadway intersections.

C.02 - Shared use paths should be complementary facilities, rather than replacements, for on-road bicycle facilities. Shared use paths may better serve the needs of B/C (basic adult and child) riders, whereas A (advanced) cyclists may prefer a direct, unobstructed, on-road travel way.

C.03 - Bicyclists are not typically required to dismount for road crossings provided as part of a Class I bike path or combined pedestrian/bicycle shared use path unless posted "dismount bikes and walk" for safety reasons. Bicyclists using shared on-road or grade-separated crossings must ride at a speed compatible with pedestrians and take appropriate precautions to avoid collisions, as provided by Utah State Code.

C.04 - Where possible, combined pedestrian/bicycle paths should be signed for shared use and at least meet the minimums specified by the *AASHTO Guide* and the *MUTCD*. Additional width is preferred for some situations, including: when steep grades are present; where curves are tight; in high-use areas unless good horizontal and vertical alignment provide safe and frequent passing opportunities; where bicyclists will likely ride two abreast; where use by emergency or large maintenance vehicles is expected; or other circumstances as identified for a particular project. The *AASHTO Guide* provides recommendations for identifying paths needing additional width.

C.05 - Directional arrows should be used at access points to one-way facilities; signs may also be needed to discourage wrong-direction riding. Two-way facilities should have a center stripe and directional pavement markings in high usage areas, and must have these markings at intersections, approaches to curves, tunnels and underpasses, and wherever line-of-sight is limited. Note: centerline markings are misleading in narrow sections of pathway where bicycles cannot safely pass each other. Narrow sections of the path should be signed to warn cyclists.

C.06 - Other design criteria for vertical clearance, graded shoulders, shy distance, railing height, design speed, horizontal alignment, super-elevation, grade, site distance, signing and marking, pavement, structures, drainage, lighting, barriers to motorized vehicles, and provisions related to multi-use should follow the *AASHTO Guide* and provisions of the *Statewide Pedestrian and Bicycle Plan*.

C.07 - Exceptions to the AASHTO guidelines for UDOT projects will be at the discretion of the Region; consultation with the Pedestrian/Bicycle Planner is recommended. Combined pedestrian/bicycle paths having less than the minimum width as specified in the most current *AASHTO Guide* may be designated on the *Statewide Pedestrian and Bicycle Plan* map as multi-use or shared use trails. If the impact of limited design exceptions can be mitigated through signs, pavement markings, or other devices to adequately inform users and allow the expected user to maintain control, the paths may be designated as bikeways. Local government projects should be encouraged to meet or exceed AASHTO guidelines.

C.08 - Inability to meet AASHTO guidelines should not automatically disqualify a project from funding. Many exceptions can be effectively mitigated, and users can be educated about the conditions of the pathway. The transportation and safety value of the project, as compared to conditions without the project, should be considered before deciding to reject a project requiring design exceptions. Consultation with the Pedestrian/Bicycle Planner is recommended.

C.09 - Contra-flow paths should not be used adjacent to a motorized travel lane unless a minimum adequate separation is provided, as addressed in the *AASHTO Guide*. The preferred method is at least five feet separation between a two-way bike path and the edge of the traveled way for motor vehicles. If this method cannot be achieved without great difficulty or prohibitive expense, adequate vertical barriers should be employed. Standard curbs are generally not satisfactory for this purpose. Jersey barrier, if used should have an additional railing installed on the top to provide fall-over protection of at least 42 inches above the surface of the path. Its use should be avoided, if possible, because Jersey barrier may interfere with sweeping, maintenance, and snowplow operations, and can obstruct visibility of both cyclists and motorists at driveways and intersections. Design Exceptions should be justified and mitigation outlined.

C.10 - Two-way paths parallel to roads should begin and end at logical origin and destination points. Safe crossings should be provided to access (Class II) bike lanes or (Class III) shared travel roadways to avoid wrong-direction riding on roads by cyclists leaving the path. Signs should note end of bike path. Directional arrows should be painted on the bike lane where it joins the path (directional signs may direct cyclists across the road to access a bike lane or shared travel lane).

C.11 - It is the intent of the Utah Department of Transportation to meet the needs of all transportation users, regardless of physical limitations. Pedestrian/bicycle pathswill be constructed for accessibility in compliance with the ADA to the extent reasonable, given the topography, right-of-way, and financial resources available. If an entire system cannot be made accessible, efforts should be made to accommodate disabled users on a portion of the facility. Examples of facilities that may not be fully accessible include walkways in areas with steep grade changes due to the natural topography and some multi-use trails designed primarily for mountain biking and hiking.

Facilities that would provide a challenging recreational experience for some people with disabilities, but not be accessible for all levels and types of disability, may be signed as such with input and guidance from appropriate user groups. All combined pedestrian/bicycle shared use paths that can be negotiated by pedestrian vehicles for the disabled, including wheelchair users with assistance, or adaptive three-wheeled cycles will have appropriate curb cuts for access and should consider the turning radii needed (sharp turns should be avoided).

C.12 - UDOT should consider the impacts of road construction and reconstruction projects on walking or shared use paths shown on an approved State, federal, local or regional master plan, including those paths that are not part of the State transportation system (plan updates or plans pending approval should be reviewed for possible impacts to the project). Examples include over-sizing culverts for drainage ways and constructing bridges over rivers to allow adequate width and vertical clearance for walkways and shared use paths in these corridors.

D. Multi-use Trails and Equestrian Use of Trails and Shared Use Paths

D.01 - All corridor studies, environmental assessments, and other transportation studies should consider the potential need for trails and paths, which may provide transportation options, within the corridor or project boundary. Potential impacts to pedestrians and bicyclists should be considered during the planning and design of roads or other transportation facilities.

D.02 - Multi-use trails, as defined for the purposes of this plan, and shared use paths constructed as part of the State transportation system would not typically include equestrian use unless specifically designated as such. Equestrian facilities may be included in a project using accepted equestrian design guidelines.

D.03 - Multi-use trails, as defined in this plan, may require approval of Design Exceptions to pedestrian and bikeway (shared use path) standards. Approved trail standards from State or federal recreation and lands agencies may be used where judged appropriate for the intended use and where acceptable to the responsible agency.

D.04 - UDOT should consider the impacts of road construction and reconstruction projects on off-road trails or proposed trails, shown on an approved State, federal, local or regional master plan, including those that are not part of the State transportation system (updates or plans pending approval should be reviewed for changes that may affect the project). Examples include over-sizing culverts for drainage ways and constructing bridges over rivers to allow adequate width and vertical clearance for trails in these corridors.

E. Designation of Bikeways and Bicycle Suitability Evaluation

E.01 - UDOT is evaluating non-urban State highways for their suitability characteristics for bicycling. Data may be published to assist cyclists in evaluating highways as potential routes (urban routes are being evaluated through the metropolitan planning process). This data may include such information as pavement width or number of lanes, availability and width of shoulders, average daily traffic, percentage of truck traffic, posted speed limit, surface materials, high wind areas, distances between points, special trucking routes, and significant grade changes. This data may be summarized in map form and updated and enhanced. Input from cyclists is important to this process.

E.02 - Rural highways should be evaluated on an ongoing basis for improvements needed to accommodate bicyclists and may be improved for bicycle use without being designated a bikeway. These improvements may benefit motorists, as well. Examples of improvements include widening shoulders, striping a shoulder lane, improved design and location of rumble strips to maximize available space for bicycles, pavement repair and sweeping of shoulders, and providing climbing lanes for bicycles on steep grades and canyon roads.

Research is also being done on a new Share The Road warning sign that shows a car and a bicycle abreast in the traveled way. As proposed, these would be available for use on highways whether or not the road is designated as a bikeway and would serve to worn motorists of the likelihood of encountering bicyclists on that route. Some state roads through Forest Service recreational areas currently have emblem signs warning motorists of bicyclists on the highway. Salt Lake City has also installed Share The Road signs at the terminals of some of their dedicated bike lanes.

E.03 - Within the urban planning areas of Metropolitan Planning Organizations, UDOT may evaluate the feasibility of designating bikeways on State roads at the request of local or regional agencies and as part of UDOT's ongoing planning for road design, construction, maintenance, and upgrades. The primary purpose of designating State roads as bikeways within the urbanized areas is would be to provide key links in a regional transportation network for commuter cyclists. These would be intended to connect and supplement routes within local bicycle networks that have been designated by cities and counties along non-State roads and off-road trails. Where good parallel routes exist, communities are encouraged to select lower-

volume and lower-speed roads for regional connections. These routes may be included on the Regional Bicycle Plan map prepared by each regional agency as a part of its Transportation Plan in compliance with ISTEA. Evaluation of state roads is done within the Traffic Engineering and Traffic & Safety Divisions.

E.04 - Designating a route that includes high-volume interchanges (providing motor vehicle access to freeways) is not desirable where reasonable alternatives are available. UDOT recognizes that access across freeway and expressway interchanges may be necessary within some corridors where accessible parallel routes are not available. Design guidelines from AASHTO, or alternatives that may be identified, can guide bicycle and motorized traffic (using pavement markings and signs) where these roads are used for bicycle access in absence of a parallel route. Providing adequate bikeway connections and directional signs to alternates may reduce bicycle use of routes with interchanges.

E.05 - Signs and pavement markings for on-road bikeways are provided by the *MUTCD* and may be suitable on paths. Use of highly visible markings is desirable. Pavement markings should not be slippery for bicycles; any raised pavement markers should be evaluated for potential impacts to bicycle safety.

F. Bicycle and Pedestrian Travel on Interstate Freeways and Other Controlled-Access Highways

Under Utah State Code, UDOT may regulate the use of controlled access highways by special classes of vehicles [41-6-65]. In 1970, under federal guidance, a UDOT Traffic Engineering Order was issued prohibiting pedestrian and bicycle use of interstate highways. The Federal Highway Administration now leaves the determination of bicycle and pedestrian usage of interstates to the individual states. Most signs posting a minimum speed limit or prohibiting bicycle and pedestrian access have been removed from Utah interstate highways.

In early 1997, UDOT worked with the State of Utah Attorney General's Office and Department of Risk Management in interpreting State Codes as they may apply to use of freeways and other controlled-access highways by bicyclists and pedestrians. Although some differences in interpretation resulted, it appears that the current legal framework allows bicyclists to use freeways and expressways unless specifically restricted. UDOT may regulate the use of controlled assess highways. The current laws also do not appear to prohibit bicyclists from using paved shoulders, which may not be included in the legal definition of "roadway". It appears that a pedestrian using the roadway as a travel-way may not be afforded the same legal protections as a pedestrian using a sidewalk or cross-walk. However, statutes do not prohibit pedestrian use of freeways and controlled-access highways. Pedestrians are required by State Code to use sidewalks where provided along roadways and to use available shoulders where sidewalks are not provided.

Concerns about bicycling on freeways include high speeds (Utah highways are

posted at 65 to 75 mph), high volumes of heavy trucks, and placement and design of rumble strips, which are often wide and located on the outside edge of shoulders. Interchanges, where accelerating vehicles are accessing the highways or where high-speed vehicles are leaving the highway, present special concerns as traffic must cross the paths of bicycles using shoulders.

Possible benefits to cyclists in using freeways and controlled-access highways include wide shoulders, long site-distances, one-way traffic, and a median separating opposing traffic directions. It is noteworthy that bicycles are allowed on other State highways, which may have no shoulders or inadequate shoulders, resulting in closer proximity to high-speed trucks. In these situations, motorists have fewer options for changing lanes to move away from the bikes. These highways are often two-lane roads, which present conflicts from motorists passing slower speed vehicles and fewer opportunities for motorists to leave a safe passing distance between the vehicle and the bike. Site distances on highways may be limited; vehicles can approach bicycles without being aware of their presence or without bicyclists being aware of the motorists' presence.

The UDOT Traffic Engineering Panel agreed to periodically undertake the task of identifying sections of the interstate system and other controlled access highways, where pedestrian and bicycle use should be restricted. Traffic Engineering Orders are issued by the Panel to restrict bicycle travel from identified sections of the interstate highway system and other specific State routes. The list is available from the UDOT bicycle and Pedestrian Planner.

F.01 - Given the advantages that some bicyclists find in interstate highway (freeway) use, the lack of alternate routes through many parts of Utah, and the ability to mitigate some concerns, a policy supportive of allowing bicyclists on portions of freeways and other controlled-access highways should be formalized.

F.02 - Restrictions on using freeways and other controlled-access highways for bicycling and walking should consider the safety of all users. The decision to restrict biking and walking on portions of these highways should include an evaluation of the safety and feasibility of proposed alternate routes. Feasibility may include availability of services, as well as roadway conditions. A map showing areas of bicycling restrictions, with exit numbers of restricted areas should be provided for touring and commuter cyclists, along with recommended alternate routes.

F.03 - Design and placement of rumble strips should be evaluated on all new construction, reconstruction, and maintenance projects that include installation or replacement of rumble strips, and projects where improved rumble strip design and placement could be reasonably added to a project, where bicycling is legally permissible. A formal policy on rumble strips design and placement would be appropriate to properly address and balance the safety needs of both the cyclist and the drowsy/distracted motorist.

F.04 - Traffic control plans for construction zones on portions of the highway known to be used by touring or commuter bicyclists should consider the need to move bicyclists safely through construction areas or be clearly signed for rerouting bicycles onto detours. In addition, impacts to cyclists on local streets, caused by construction detours or state roads, should be addressed.

F.05 - Maintenance plans for shoulders, including sweeping and pavement repair, should consider the needs of bicyclists where cycling is legally permissible. Personnel should be made aware of striping configurations that have been provided to address special needs of cyclists so these are not eliminated during routine maintenance operations, particularly if a non-standard configuration has been used.

G. Railroad Crossings

TEA-21 requires that pedestrian and bicycle safety be considered when at-grade railroad-highway improvements are being made.

G.01 - Within available resources, UDOT should work with the railroads toward the goal of ensuring that all highway, local road, and approved bikeway crossings are upgraded to improve crossing accessibility and safety for bicyclists. Upgrading of railroad crossings on highways and other roads is important, as bicyclists are legal users of public roads in Utah. Crossings should comply with the *AASHTO Guide for the Development of Bicycle Facilities* or other accepted standard to prevent bicycle tires from being trapped in openings within the crossing zone. Paved shoulders may also need to be widened at crossings to allow bicycles to approach tracks on a perpendicular path, particularly where tracks are skewed to the roadway.

G.02 - All pedestrian crossings of railway lines should consider accessibility by wheelchairs and pedestrian vehicles for the disabled. Pedestrian safety should incorporate ADA guidelines in the installation of crossing arms. Extended arms to block the sidewalk, as well as the roadway, or special pedestrian crossing gates may be warranted.

H. Construction Zones

H.01 - The provision of special access through construction zones for pedestrians and bicyclists can significantly improve safety for all highway users, particularly where good alternate routes are not available. Bicyclists and pedestrians should be given warning, by signs, if they must exit the highway. When a pedestrian and/or bicycle detour is established, the full detour route should be adequately marked or signed. The full detour should be kept free of hazardous conditions(holes, humps, debris, puddles, steep sections, and high vertical steps.

I. Destination Facilities and Support Services

I.01 - Municipalities and State facilities managers should be encouraged to provide

bicycle parking at all public facilities and to require the installation of bicycle parking racks at employment centers, commercial and service centers, public offices, and recreational facilities, to support bicycling as transportation. Partnerships may provide funding opportunities.

I.02 - Communities along corridors used for non-motorized transportation, particularly known touring routes should be encouraged to incorporated destination facilities and support services for the safety and comfort of pedestrians and bicyclists into community design when feasible. Examples of facilities that may be provided include restroom facilities, drinking water, emergency telephones, bicycle racks, lighting for security and visibility, benches, shelters, trash receptacles, landscaping, interpretive signs or displays, and directional and informational signs. Employers should also be encouraged to provide showers and lockers for biking employees.

I.03 - Support areas (trail-heads) that include parking, pavilions, and other service areas should be appropriately interconnected with paths, sidewalks, and bikeways to avoid conflicts between those using the pathway and people unloading bicycles from vehicles, accessing restrooms, etc. While trail-heads may be origin and destination points for some users, others will be continuing their travel and should be provided a by-pass that avoids these conflicts; this is of particular concern on paths used by commuter cyclists. Sharp turns through confined areas and standard-width sidewalks as part of the pathway do not easily accommodate adaptive three-wheeled cycles, bicycles pulling trailers, or recumbent bicycles. Because sharp angle turns are awkward on a bike, other users are likely to cut corners, contributing to erosion and damage to vegetation along the path.

I.04 - All public support facilities (restrooms, pavilions, etc.) along accessible portions of the walkway or shared use paths should meet or exceed ADA accessibility requirements. Some paths that do not meet ADA requirements for wheelchairs may be accessible to adaptive cyclists, wheelchair users that can access challenge courses, or wheelchair users with assistance. Programs such as the Universal Trail Assessment Process, developed by Beneficial Designs Inc., are increasing access to many areas by the disabled. Also, in the event that the path is upgraded in the future (as in adding asphalt paving), retrofitting support facilities would be very expensive. For these reasons, support facilities should be ADA accessible along the entire route if possible.

J. Snow Removal

J.01 - Designated bicycle lanes on State roads within urbanized areas and non-urban towns should be included to the extent reasonably possible for snow-plowing operations. However, given the lower level of expected bicycling during snowy weather (due to cold weather, slick road conditions hazardous to bicycles, and splashing from passing motor vehicles when snow is wet or melting), snow-plowing of bicycle lanes may be a lower priority than keeping roadways clear.

J.02 - Shoulders on State roads within urbanized areas and non-urban towns where frequent bicycle use is known to occur should be included in snow-plowing operations if adequate snow-storage area is available and if resources permit. Given the lower level of expected bicycle commuting during snowy weather (as a result of cold temperatures, slick road conditions hazardous to bicycles, and splashing from passing motor vehicles when snow is wet or melting), a lower level of maintenance for bicyclists may be reasonable to expect. However, UDOT should track those routes where year-round demand is high, even during inclement weather, and consider this when allocating available resources with the understanding that region resources may not be available due to demands of keeping roadways open. Shoulders may be needed for snow storage. Snow should be removed from shoulders routinely used by pedestrians to access school buses, transit stops, or as walkways, where sidewalks are not provided.

J.03 - Sidewalks and shared pedestrian/bicycle facilities within urbanized areas or non-urban towns are typically the responsibility of local governments or adjacent property owners. Scheduling these for snow removal is valuable where access to schools, employment and business centers, and transit stops provides a vital transportation need for pedestrians.

J.04 - Snow removal on off-road bicycle paths, shared use paths, multi-use trails, and rural highway shoulders for the purpose of providing bicycle and pedestrian access is not a standard procedure for UDOT. However, where feasible, snow should be removed from shoulders routinely used by pedestrians to access school buses, transit stops, or as walkways, where sidewalks are not provided. Users of paths, trails, and shoulders should anticipate snowy conditions that may affect accessibility, safety and convenience. Users should expect to encounter silt and debris from erosion after snow-melt and proceed with caution. Maintenance should be scheduled as soon as practica[b]le to clean up silt and debris when paths, trails and shoulders become accessible. Maintenance of projects constructed as Transportation Enhancements is covered by a maintenance agreement with the local sponsor.

J.05 - Where suitable and where snow removal for transportation is not a demand, paths and trails may be opened for such recreational uses as cross-country skiing, snow-shoeing, or snow-mobiling (combining snow mobiles with cross-country skiers and snow-shoeing should, however, be avoided). Trails funded through programs

requiring FHWA or FTA approval, except for the National Recreational Trails Fund, are determined to serve primarily a transportation purpose (provide a connection between origins and destinations). Section 1033 of ISTEA states, “motorized use of these trails is not allowed except ... when snow conditions and State or local regulations permit, snowmobiles....”.

K. In-line Skaters

The Association of Pedestrian and Bicycling Professionals[APBP] has discussed the use of roadways, bike lanes and sidewalks by skaters. In some localities across the U. S., skaters are allowed on all roads except roads with four or more lanes; others are considering changing ordinances to allow skaters on streets and bike lanes to reduce conflicts with pedestrians. Some cities have banned skaters on roadways, bike lanes and sidewalks within defined business districts due to incidences of crashes between out-of-control skaters and others in congested areas. Although in-line skaters are the most common users, traditional roller skates, skateboards, and motorized skateboards may also present conflicts.

Reasons given by APBP members for allowing skaters on streets and bike lanes include:

- Skaters on sidewalks present some of the same problems as bicycles on sidewalks: skaters move faster than pedestrians, and drivers may not anticipate their approach on sidewalks at intersections and driveways; pedestrians may not be comfortable sharing space with skaters; and unwary walkers may step out in front of fast-moving skaters;

- Skaters are more akin to bicyclists than pedestrians: similar requirements for using lights after dark could be applied to skaters; skaters may be covered under “due care” laws that require them to maintain sufficient control to stop at intersections or in an emergency.

Difficulties in allowing skaters on bike lanes were cited as:

- Tendency of skaters to wander back and forth across the available path, making bicycling around them more unpredictable than bicycling around pedestrians or other bicyclists, both of whom tend to track a straighter path.

- Difficulty of stopping and the longer distance required for stopping on skates can create hazards within a bike lane.

The only specific Utah Code citation for skaters is one prohibiting skaters from attaching to a moving vehicle [41-6-86]. Policies and potential legislative changes for skaters on Utah transportation facilities should be further researched. Although typically used for recreation and personal fitness, some people do use skates for transportation. Where sidewalks are not available or where skating on sidewalks is prohibited, skaters often use roadways. Skaters probably consider themselves as pedestrians, as they are not otherwise classified by Utah law and Utah Code defines a pedestrian as "any person afoot" [41-6-1 (29)]. Skating against the flow of traffic is quite common. This presents similar problems to bicycling against the flow of traffic (which is illegal on roadways).

Skaters do not seem to "fit" well with the design of pedestrian walkways, bike lanes, or vehicle traffic lanes. However, skating is a use that exists on these facilities and should be addressed. Requiring skaters using roadways to follow traffic rules, such as stopping at stop signs, may be appropriate, although full rights to the roadway (as allowed for bicycles using left-turn traffic lanes or riding on freeways, for example) may not be reasonable. The suitability of rural highways versus urban or in-town highways may be considerably different. Also, skaters on roadways face similar hazards to those experienced by bicyclists due to uneven pavement and gutter joints, damaged pavement surfaces, and unsafe storm water grates. On sidewalks, they share the need for ramps with wheelchairs or disabled-pedestrian vehicles. The Utah State Traffic and Pedestrian Coordinating Council is presently developing recommendations for Pedestrians and Pedestrian conveyances.

VIII. DESIGN GUIDELINES FOR PEDESTRIAN FACILITIES, CROSS-WALKS, AND SCHOOL ZONES and ACCOMPLISHING ACCESSIBILITY UNDER ADA

Current guidance for UDOT in providing, constructing, and operating pedestrian facilities is provided by the Utah State Code, the *Manual on Uniform Traffic Control Devices (MUTCD)*, the UDOT *Manual and Specifications on School Crossing Zones* (1992), the UDOT *Metric Standard Drawings*, the Americans with Disabilities Act of 1990 (ADA), the Architectural and Transportation Barriers Compliance Board, the Uniform Federal Accessibility Standards, and the American National Standards Institute. The *AASHTO Guide for the Development of Bicycle Facilities* provides guidance for shared pedestrian/bicycle facilities. The U. S. DOT Pedestrian and Bicycle Clearinghouse is a resource for research, reports, guidelines, and technical guidance.

Accomplishing ADA accessibility for some pedestrian sidewalks, paths, and multi-use trails can be difficult or impossible under certain terrain conditions or may affect the feasibility of constructing the project due to cost considerations. The Architectural and Transportation Barriers Compliance Board established a Recreation Access Advisory Committee in 1993 to examine six categories of recreation facilities and make recommendations for accessibility. In reviewing the resulting recommendations and comments received, the Board determined that consensus was lacking in two areas, including outdoor developed areas such as trails.

Two approaches were recommended, based on four different environments: the highly developed or urban; the moderately developed or natural; the minimally developed or back-country; and the undeveloped or primitive. Three degrees of accessibility (easier, moderate, and difficult) were recommended which correlate with the amount of site modification and development, as well as the natural environment and rugged terrain.

--The first accessibility alternative considered five interrelated factors: recreation setting, condition of the natural environment, amount of structural modification, recreation experience, and consultation with people with disabilities.

--The second alternative selected the easier degree of access for all recreation settings and environments unless it would change the fundamental nature of the activity or environment. Exceptions to modify the degree of access based on severe elevations, geologic features, historic character, or the specific purpose of a trail, with documentation of participation in the decision-making by people with disabilities or their representatives, would be considered. A proposed rule is anticipated on accessibility guidelines for outdoor developed areas.

Although UDOT's focus is not on recreational facilities, many transportation or transportation-linked facilities have a recreational function and will likely be affected by the new guidance.

UDOT strives to meet the needs of all transportation users. The Americans with Disabilities Act assures that a disabled person will have full access to all public facilities throughout the U. S. Meeting the spirit of the law, as well as the letter of the law, should be of primary importance.

Within urban areas, cities and towns, facilities should be accessible wherever possible. Providing accessibility may include removing barriers along sidewalks, installing wheelchair ramps and curb cuts, providing level rest platforms, improving transit stops, repairing damaged pavement, adding textured surfaces on ramps, and the use of audible crossing signals. Some non-paved surfaces can be accessible to wheelchairs; other accessibility factors should not be overlooked based solely on plans to construct a non-asphalt or non-concrete path. Paths and trails (urban and rural) should, at least, have portions that are accessible to those with special needs if the entire facility cannot meet accessibility standards.

Support facilities (such as restrooms, drinking fountains, parking at trail-heads, picnic tables, telephones for emergencies) along these accessible areas must also be designed for accessibility. Some areas not meeting ADA specifications may be accessible to adaptive three-wheeled cyclists, wheelchair users capable of challenge courses, or wheelchair users with assistance. Programs such as the Universal Trail Assessment Process, developed by Beneficial Designs Inc., are increasing access to many areas for disabled citizens. Also, in the event that the pathway is upgraded (by adding paving during future phases of a rural trail system, for example), retrofitting non-accessible restrooms and other facilities would be costly. For these reasons, all support facilities should initially be made ADA accessible whenever possible.

While constraints within the transportation system often relate to mobility - such as the ability to walk with assistive aids or to use a wheelchair or pedestrian conveyance for the disabled, other disabilities present challenges to the transportation agency as well as to the transportation system user. These include sensory limitations, such as sight or hearing, or cognitive limitations. Though not considered disabled, children and seniors may have special mobility, sensory, and cognitive challenges similar to those covered by ADA (children have poorly developed peripheral vision and have not developed good judgment about speed and distance of on-coming cars; seniors may need additional response time and additional time for ambulation).

Access considerations include width, pavement surface, slope, cross-slope, ramps, audible crossing signals, and pavement differentiation (such as texture changes) between the sidewalk and roadway at intersections that can be discerned by the visually impaired. Where driveways or ramps cross sidewalks, the transition should not cause a hindrance, and the slope on the driveway or ramp should not exceed ADA specifications. Street-light and other utility poles, street furniture, newspaper vending machines, landscaping and signs, which may be useful and desirable as part of the overall facility, should not obstruct the sidewalks.

Transit stops available to wheelchair users should be designed in accordance with ADA guidelines. Transit shelters or benches should not obstruct the travel way of the sidewalk. Shared use pedestrian/bicycle facilities that include rails along the path may need to consider two rail height requirements - one that is high enough to prevent a bicyclist from being thrown over the rail on impact and one that is low enough to provide assistance to wheelchair users. Where small children use the facility, an additional, lower rail may be necessary to keep small bikes from passing beneath the rail.

1. Wheelchairs require 0.9 m (three feet) minimum clear width for continuous passage with periodic passing space for wheelchairs traveling in opposite directions. The preferred minimum clear usable width for a sidewalk along arterial roads is six feet. In areas with a high volume of pedestrian activity, wider sidewalks may be appropriate.

2. Providing a buffer between pedestrian walkways and the roadway improves safety and increases the comfort level of pedestrians. Buffers may be accomplished by spatial separation, landscaped park strips, use of street furniture, on-street parking, on-road bicycle lanes, or (where other options are not available) increased sidewalk width for sidewalks adjacent to the curb.

3. The need for lighting along walkways should be considered for visibility and security. Supplemental lighting may be needed where standard street lighting for the roadway is not spaced or directed to adequately light sidewalks.

4. The maximum cross slope for drainage of walkways should be two percent. Driveway and ramp crossings of sidewalks should be designed to maintain this cross slope along the passageway, with a level waiting area.

5. The maximum longitudinal grade should be five percent for a sidewalk or path, but may be a maximum of eight percent where necessary. Long, steep grades must have level areas at intermittent distances (a five-foot minimum level landing for every 30 inches of vertical rise or every 30 feet of horizontal run) for easier access by pedestrians using crutches, walkers, wheelchairs, or those for whom walking requires greater effort, and should include a turn-out with a pedestrian bench every 300 feet.

A slip resistant surface must be used for ramp grades, and rails at a height of 32 inches may be required. Current ADA specifications should be consulted during project design.

6. Wheelchair ramps and curb cuts should be designed to allow direct access to cross-walks and to prevent wheelchairs from moving into the path of traffic. While it may be less costly, a design that places a single wheelchair ramp at the corner of a sidewalk, rather than using two ramps to access perpendicular cross-walks presents several concerns. It does not maximize safety or accessibility and may require awkward maneuvering difficult for a disabled person. This type of cross-walk also

does not provide adequate directional guidance for blind pedestrians.

Sidewalks that are graded to blend in with the grade of the roadway along a radius at an intersection may pose a hazard to pedestrians. Motorists may "cut" the corner, crossing the pedestrian walkway and traveling at a higher speed than where a curb delineates the corner. This design may also make discerning the end of the sidewalk and the beginning of the roadway difficult for the visually impaired and provides poor crossing guidance for blind pedestrians.

7. Concrete sidewalk ramps should join smoothly with asphalt roadway surfaces and should be inspected periodically to ensure that gaps are not developing at the joint.

8. Portland Cement Concrete is preferable to asphalt as a paving surface for walkways due to smoothness, durability, maintenance, and a lower susceptibility to damage from vegetation break-through. Compacted, unpaved surfaces (such as crushed stone with a diameter less than 3/8 inch) may be acceptable for rural paths or trails that serve a primarily recreational rather than transportation function. Traction should also be a factor in selecting walkway treatments.

9. Bollards used to prevent motorized vehicle access should maintain at least a 32-inch width clearance for wheelchairs; however, this may not be sufficient spacing for adaptive cycles for the disabled, which may have a 34- to 35-inch rear wheel base. Approaches to bollards should avoid right angle turns.

10. Trail heads and other access points should include accessible parking.

IX. DESIGN GUIDELINES FOR BICYCLE FACILITIES

1. Minimum guidelines for bicycle facilities and combined pedestrian/bicycle facilities designed, constructed, or maintained by the Utah Department of Transportation, or constructed within a State highway right-of-way, should be the minimum guidelines specified in the most recently approved version of the *AASHTO Guide for the Development of Bicycle Facilities*, except as otherwise provided in this plan. Where the *AASHTO Guide* specifies preferred and minimum design guidelines, use of the preferred design guideline wherever reasonably possible is strongly recommended.

2 . At the discretion of the Region Director or designee, Design Exceptions may be approved to facilitate construction of the project. Consultation with the Pedestrian/Bicycle Planner is recommended. Exceptions may be approved for conditions related, but not limited to:

- Topography;
- Right-of-way limitations or other physical space constraints;
- Impact to sensitive environments or view sheds;
- Financial constraints that would prevent construction of a needed project;
- Anticipated low-volume use or low mix of bicycle and pedestrian traffic;
- Ability to mitigate impacts from Design Exceptions.

All Design Exceptions should include:

- An evaluation of safety and liability impacts for not meeting accepted standards and guidelines for bicycle or combined pedestrian/bicycle facilities; and
- An evaluation of the need for mitigation of impacts that may result from Design Exceptions.

3. The Region Director or designee may require that design exceed the *AASHTO Guide* for conditions including, but not limited to, the following:

- Anticipated mix of bicycle and pedestrian use;
- Expected high use facility;
- Steep grades requiring higher bicycling design speed for downhill or additional width for up-hill climbers;
- Safety and capacity concerns for the intended use.

4. The U. S. DOT Pedestrian and Bicycle Clearinghouse, Utah State University Technology Transfer Center, or other resources may provide innovative solutions that suitably address Design Exceptions necessary or appropriate for construction of a project. Consultation with the Pedestrian/Bicycle Planner is recommended.

5. Bicyclists using any *Statewide Pedestrian and Bicycle Plan* map or bicycling facilities should be able to feel confident that the facilities they use will be reasonably consistent and meet their expectations based on the definitions given in the plan and map element of the plan. Inconsistencies and surprises to the bicyclist and motorist, particularly in high-traffic, urbanized areas, can be hazardous and must be avoided. For these reasons, Design Exceptions that would create inconsistencies that affect the safe use of the facility, without reasonable justification for the exceptions, are discouraged. For example, it may be preferable to designate a connecting section of roadway as a Class III bikeway, whether or not paved shoulders are available for bicycle use, rather than a Class II that does not meet rider and motorist expectations.

However, inability to meet AASHTO guidelines or other guidelines provided in this document should not preclude the use of Design Exceptions that can be effectively mitigated, that will reduce significant environmental impacts, or where inability to use Design Exceptions would prevent construction of a needed project. Inability to meet AASHTO guidelines should not automatically disqualify a project from funding. Many exceptions can be effectively mitigated, and users can be educated about the conditions of the bikeway or trail. Other State Bicycle and Pedestrian Plans may provide guidelines suitable for a particular on-road facility, off-road path or trail system and should be considered valid resources during the

development of UDOT design criteria. Consideration should be given for the value of the project for transportation and safety, as compared to existing conditions without the project, before rejecting a project requiring design exceptions.

X. CONSTRUCTION, PAVING, AND STRUCTURES -

1. UDOT standard construction and paving requirements may be altered for bicycle and combined pedestrian/bicycle facilities. Pavement loading should accommodate occasional use by maintenance and emergency vehicles where needed, but should be designed for cost-effectiveness based on its intended use for bicycles, pedestrians, and conveyances for the disabled. Width of paths used by maintenance and emergency vehicles should be adequate that pavement edges are not damaged by vehicles.

2. Rumble strips, where necessary for motor vehicles, should be designed and placed such that the shoulder area is left clear for bicyclists and hazards are reduced for bicyclists that must cross the rumble strip.

3. Use of soils sterilants or weed barriers may be advisable to prevent vegetation damage to asphalt paths. Large trees or shrubs adjacent to paths may require root pruning to prevent disruption of the path surface. Vegetation that obstructs views around curves or approaching barriers or other hazards should be cleared away from the edge of the path. When new trees are planted along pathways, the use of root barriers along the pathway and within the anticipated drip line of the trees should be considered.

4. Structures, bridges, tunnels, viaducts, overpasses, and underpasses on roadway construction and reconstruction projects should include consideration for pedestrian and bicycle use, including: adequate width (including travel path and shy distance from walls and railings) across, underneath, or through structures; availability of designated walkways; lighting for visibility and security; and access (at interchanges, for example).

5. Structures should have sidewalks on both sides of the roadway. If one-way bike lanes or paths are on both sides of the roadway, they should be continued across or through the structures and not be placed on one side of the structure. If walkways or bikeways cannot continue across both sides of a structure, provisions should be made to cross the road at each end of the structure to access the available walkway or path.

6. UDOT standards for bridges and other structures may be altered when designed exclusively for bicycle, pedestrian, or combined pedestrian/bicycle facilities. Loading and other requirements should be based on cost-effective design for the

intended use. Some structures may need to consider loading for maintenance or emergency vehicles and will be identified on an individual project basis.

7. On pathways for the exclusive use of non-motorized travel, it is recommended that approaches to bridges, tunnels, etc., be flared outward from the path. At a minimum, bridges, boardwalks and tunnels should continue the full width of the pathway. Where feasible, bridges, tunnels and boardwalks should also include adequate shy distance (two feet on each side recommended) from bridge railings, boardwalk edges, and tunnel walls to reduce the tendency of bicyclists to ride down the center of narrow enclosures (risking head-on collision) and to allow bicycles and pedestrians to cross together. Tunnels should provide vertical shy distance for bicyclists, with a recommended clearance of ten feet in height. Vertical shy distance is particularly important when the path has a downhill approach to a tunnel.

8. The need for night and daytime lighting should be considered for visibility and security. Entering from bright sunlight into a dimly lit tunnel requires time for vision to adjust. This situation may require daytime lighting.

9. In tunnels used by motor vehicles, the use of a bicyclist-activated warning system should be evaluated on a case-by-case basis. This system, similar to pedestrian-activated crosswalk signals, activates a lighted warning sign to let motorists know that bicycles are in the tunnel.

XI. SHORT-TERM IMPLEMENTATION STRATEGIES AND MAINTENANCE

Due to funding limitations and the time required for programming, designing, and constructing facilities, short-term implementation strategies can be helpful in making bicycle facilities available in the near term or improving the safety of shared use by bicycles and motorized vehicles. These may be projects that can be implemented with minimal procedural requirements, that can be added to current projects without significant design and cost adjustments, or be accomplished by adjusting maintenance practices. Some strategies may also improve pedestrian access in areas where needs have changed.

A. <u>Pavement Resurfacing / Overlay / Restriping Projects</u> -

- Asphalt paving and concrete gutters should join smoothly, without a drop-off from the new pavement level to the existing gutter level.

- Unpaved shoulders should be gently sloped to join new pavement surfaces without a drop-off, to allow bicycles to safely leave and re-enter the paved roadway if necessary.

- Storm water drains and utility covers should be raised level (within one-quarter inch) with the pavement surface, or the pavement should gently slope to and away from the drain or utility cover.

- Storm water drains that are not bicycle-safe should be replaced or retrofitted to avoid catching a bicycle tire, which can cause the rider to go over the handlebars and result in serious head and neck injuries. Grate openings in the direction of travel should not exceed 100 mm (four inches). Retrofitting should consider impacts to drainage and snow-plowing operations.

- Project planning and design should consider the possibility of restriping to provide an undesignated shoulder or designated bike lane meeting or exceeding the most current *AASHTO Guide for the Development of Bicycle Facilities*. This may include reducing the width of one or more travel lanes, adjusting the configuration of travel and turn lanes, or adjusting or restricting on-street parking. On highways without curbs, as little as two feet of shoulder width can improve cycling conditions.

- If striping a shoulder or bike lane is not possible or desirable, project planning and design should consider the possibility of providing a wider than normal outside lane (wide curb lane) for shared use by bicycles and motorized vehicles. Wide curb lanes can be particularly useful in smaller towns, on community or neighborhood streets with lower traffic volumes, where truck traffic volumes are low, and where street design encourages lower speed limits.

- ROUTE DESIGNATION-Where a designated bike lane is added, signs and pavement markings will be included in accordance with the *Manual on Uniform Traffic Control Devices (MUTCD)*. Where routes are designated as Class III Shared Roadway Bike Routes, signs will be in accordance with the *MUTCD*. Where shoulder lanes or wide outside lanes are provided or where bicycle traffic is known to occur without these facilities (including routes not designated as bikeways), Share the Road or Shared Roadway signs may be added.

B. Highway Maintenance -
- Pavement on shoulders and outside edges of roadways should be repaired to eliminate pot-holes, deteriorating and unstable edges, drop-off from pavement edges to unpaved shoulders, large pavement cracks, or other conditions that are hazardous to bicycle travel.

- To remove hazards such as gravel, silt, broken glass and other debris, sweeping highway shoulders should be given consideration especially in high use corridors

C. Intersection Configuration and Signaling -

- Intersections may need periodic reevaluation to consider changing needs for walking, biking and transit access. Lack of cross-walks, incorrect signal timing to cross wide roads, medians that interrupt legal crossings or fail to provide a safe refuge area, free right-turn lanes, loops that are not responsive to bicycles, and pedestrian-activated signal call buttons that are inaccessible to bicycles make walking and biking difficult. A reasonable detour for an automobile is less reasonable for a bicyclist, more unreasonable for a pedestrian, and perhaps impossible for a disabled or senior adult pedestrian. Adjustments to signals, medians and cross-walks may significantly improve non-motorized access.

- Some areas where automobile traffic is diverted (right or left-turn only, no through-traffic) may be suitable for through-bicycle traffic (for example, near universities or other centers that attract high numbers of bicyclists). Alteration of signal cycles and modification of barrier medians to permit passage of bicycles may be the only modifications needed to make these areas accessible.

- In areas where traffic-calming measures are considered, impacts to bicyclists should be evaluated as well as benefits to pedestrians. It may be decided that the needs of and potential benefits to one user group have greater significance than the impacts to another user group at a given location. Configurations that improve walkability, such as bulb-outs at intersections to reduce width of cross-walks or on-street parking as a buffer between pedestrians and motorists, may use the only space available for bicycles where road width is a limiting factor. Traffic-calming measures that are useful within towns and on local roads may not be suitable for high-volume, regional corridors.

XIII. SPECIAL EVENTS

UDOT's Rule for Special Road Use, R920-4, states that UDOT will support special events occurring on State roads. UDOT Permit Officers, the Pedestrian/Bicycle Planner and Risk Management staff have developed a permit application for special events on State roads, guidelines for various types of events, and a participant waiver of liability. As part of the permit, a certificate of insurance is required from the event sponsor listing UDOT as an additionally insured party. Requests received through the Pedestrian/Bicycle Planning office are forwarded to the Permit Officer for the Region where the event originates. The officer coordinates with other affected Regions and issues a permit to cover the entire event. Providing a uniform procedure and single contact point streamlines the process for sponsors, improves our customer relations and the likelihood that groups will notify UDOT of their plans, and moderates Region and District work loads.

ENDNOTES:

- *Final Report - The National Bicycling and Walking Study: Transportation Choices for a Changing America*, page vi, U. S. DOT Publication No. FHWA-PD-94-023

- *Pro Bike News*, Volume 17, Number 6, Bicycle Federation of America, June 1977.

- *NBPC Technical Brief: The Economic and Social Benefits of Off-Road Bicycle and Pedestrian Facilities,* Technical Assistance Series, Number 2, National Bicycle and Pedestrian Clearinghouse, September 1996.

- *Ibid.*

- *Ibid.*

- *Bicycle and Pedestrian Planning Under ISTEA, Participant Workbook*, NHI Course No. 15135, U.S. Department of Transportation (USDOT), Federal Highway Administration , Publication No. FHWA-HI-94-028, June 1994.

- *A Summary: Bicycle and Pedestrian Provisions of the Federal-Aid Program, as Amended by the Transportation Equity Act for the 21st Century*, U.S. Department of Transportation, Publication No. FHWA-PD-98-049, HEP-10/8-98 (20M)E.

- *Bicycle and Pedestrian Planning Under ISTEA, Participant Workbook*, NHI Course No. 15135, U.S. Department of Transportation, Federal Highway Administration, Publication No. FHWA-HI-94-028, June 1994.

- *A Summary: Bicycle and Pedestrian Provisions of the Federal-Aid Program, as Amended by the Transportation Equity Act for the 21st Century*, U.S. Department of Transportation, Publication No. FHWA-PD-98-049, HEP-10/8-98 (20M)E.

- Allstate Insurance Company, Draper, UT, telephone inquiry, June 1997.

ACKNOWLEDGMENTS

The UDOT Statewide Planning staff gratefully acknowledges the input, shared expertise, and cooperation of the many individuals, organizations, and public agencies that have contributed to the *Statewide Pedestrian and Bicycle Plan*. We look forward to continuing these alliances to improve walking and biking transportation opportunities in Utah.

Many Utah citizens, bicycle clubs and visitors from other states have completed questionnaires, comment cards, sent e-mail messages or letters, called by telephone, responded to requests for assistance, hosted or attended meetings and special events, or offered their services in assisting other bicyclists with route information and commuting skills. Appreciation also goes out to the press and other media for their informative and interesting coverage of pedestrian and bicycle planning efforts, issues of concern, and walking and biking safety.

Professional knowledge, expertise, input on needs, networking, and contribution of materials came from the staff and elected officials of many cities and counties of Utah, Salt Lake City Mayor's Bicycle Advisory Committee, Mountainland Association of Governments, the Utah Valley Non-motorized Transportation System Advisory Committee, the Wasatch Front Regional Council, the Cache Metropolitan Planning Organization, Councils and Associations of Governments across Utah, the Utah Chapter of the American Planning Association, the Utah League of Towns and Cities, regional Travel Councils, the Utah Safety Council, Future Moves, members of the Transportation Enhancements Advisory Committee, the Davis County Transportation Task Force, and the Utah Transit Authority.

Providing perspective and assistance from across the nation were the State Pedestrian/Bicycle Coordinators, members of the Association of Pedestrian and Bicycle Professionals,the Federal Highway Administration in Utah and Washington, D. C., the Bicycle Federation of America, the Rails-to-Trails Conservancy, Greenways Inc., AASHTO members, and the League of American Bicyclists. The Utah Transportation Commission, the management and staff of UDOT Divisions, Regions, and Districts, the Governor's Office, members of the State Legislature, and staff from numerous State of Utah agencies have participated in many valuable ways and continue their dedicated efforts.

APPENDIX A - DEFINITIONS Used in the *Statewide Pedestrian and Bicycle Plan* - the following terms are defined only as they are generally used within the Utah Department of Transportation Statewide Pedestrian and Bicycle Plan and are defined in general terms. Refer to the Utah State Code for legal definitions and to specific references, such as the MUTCD, when the exact definition from the reference may be important.

AASHTO - Association of American State Highway and Transportation Officials.
AASHTO Guidelines - Provisions of the most recently approved version of the *AASHTO Guide for the Development of Bicycle Facilities*.
ADA - Americans with Disabilities Act, which ensures accessibility for people with special needs related to physical disabilities.
Amenities - improvements to facilities to make them more desirable for pedestrian and bicycle use; may include bike racks or other parking, benches, trash receptacles, restroom facilities, drinking fountains, informational or interpretive signage, landscaping, picnic areas, public art displays, shelters, emergency telephones, or other improvements.
ANSI - Provides certification for bicycle helmets with an ANSI sticker inside the helmet; updated ANSI Z90.4-1996 standard is identical to the ASTM standard and replaces the ANSI Z90.4-1984 standard (note: older helmets are still on the market).
ASTM - Provides certification for bicycle helmets with an ASTM sticker inside the helmet.
Bicycle - a device typically having two tandem wheels more than 14 inches in diameter, a frame, a saddle to support a rider, handlebars for steering, and that is human-powered and non-motorized; also includes tandem bicycles; may include adult three-wheeled tricycles or adaptive cycles for the disabled; may include a trailer for children or for baggage pulled behind a bicycle.
Bicycle and Pedestrian Coordinator/Bicycle and Pedestrian Planner - Synonymous
Bicyclist - someone riding a bicycle.
Bike - see Bicycle
Bikeway - a path, lane or route designated for bicycle use, meeting the standards prescribed by UDOT for a Class I bike path, Class II bike lane, Class III bike route, or combined pedestrian/bicycle shared use path; does not include multi-use trails as defined in this plan or sidewalks designed primarily for pedestrian use.
Bike Lane (Class II Bikeway) - A special, reserved-use lane (may be shared use for emergency vehicle access or emergency parking of disabled vehicles) for exclusive operational use of bicycles. Where marked by signage and pavement markings, may be shared use with motor vehicle right-turn only lanes.
Bike Path (Class I Bikeway) - A pathway designated for bicycles that is physically separated from the roadway by grade, physical barrier, landscape median, or by a space of at least five feet.

Bike Route (Class III Bikeway, Shared Roadway) - A signed, designated route for bicyclists that does not provide a dedicated space for bikes; bicycles share the traffic lane with motorized vehicles.
Cache MPO - Cache Metropolitan Planning Organization - metropolitan transportation planning agency for the Logan urbanized area.
Class I Bikeway - See Bike Path.
Class II Bikeway - See Bike Lane.
Class II Shared Use Path - See Shared Use Path.
Class III Bikeway - See Bike Route.
County Road - a road maintained by a County within the State of Utah that is not a State Road.
CPSC - U.S. Consumer Product Safety Commission - Provides the newest standards for bicycle helmet safety. All CPSC helmets have a label or sticker indicating the helmet meets the standard.
Cyclist - See Bicyclist.
Equestrian - someone riding a horse for recreation or transportation, or descriptive term related to use of a facility by horses
Facilities - sidewalks, roadways, routes, lanes, paths, or trails for pedestrians, bicycles or equestrians, including signage and painted pavement markings; may also include support facilities and amenities such as bicycle racks, lockers, or trail-heads, or safety features such as lighting or emergency phones.
FHWA - U. S. Department of Transportation, Federal Highway Administration
Helmet - head gear for bicycling to protect the rider's head from impact; should be safety certified (CPSC standards, Snell Memorial Foundation certification or meets ASTM or ANSI Z90.4-1996 standards).
Local Road - a road maintained by a City within the State of Utah that is not a State road.
MAG - Mountainland Association of Governments, metropolitan planning organization for urbanized areas of Utah County.
MPO - Metropolitan Planning Organization
Multi-use Trails - paths separate from the roadway, designed for combined pedestrian/bicycle use, which do not meet UDOT guidelines for a bicycle path or shared use pedestrian/bicycle path - unless design exceptions are effectively mitigated - or may not meet user expectations due to deviations from accepted design or construction practices to a degree that designation as a bikeway or path is not appropriate.
MUTCD - Manual on Uniform Traffic Control Devices, most recently approved version.
NHTSA - National Highway Traffic Safety Administration.
Nonmotorized - transportation modes, such as walking, running, bicycling, skating, cross-country skiing, snow-shoeing, or horseback riding, except that motorized pedestrian vehicles for the disabled may be included when operating at a speed compatible with other pedestrian use as defined under USC.

Pedestrian - someone traveling by foot or using a wheelchair (may include some pedestrian vehicles for the disabled under USC) for transportation or recreation, and afforded rights and responsibilities by Utah State Code.
Pedestrian Conveyance - a vehicle, device or conveyance with any number of wheels, with a riding surface of any design, and specifically includes scooters, upon which a person may place one or more feet, and which is designed to be or can be propelled by the operator's human power or by gravitational force, or by ancillary motors or engines.
Pedestrian Vehicles for the Disabled - motorized or non-motorized wheelchairs or carts used by pedestrians unable to walk due to a physical disability or health condition; under USC 41-6-82.50, “any self-propelled conveyance designed manufactured, and intended for the exclusive use of persons with a physical disability, but the vehicle may not: I) exceed 48 inches in width; ii) have an engine or motor with more than 300 cubic centimeters displacement or with more than 12 brake horsepower; iii) be capable of developing a speed in excess of 30 miles per hour.” Operation of a pedestrian vehicle on the sidewalk or other pedestrian areas is limited under USC to having “a motor of not more than .5 brake horsepower capable of developing a speed of not more than eight miles per hour.”
Physical disability - any bodily impairment which precludes a person from walking or otherwise moving about as a pedestrian (USC 41-6-82.50).
Shared Roadway - see Bike Route.
Shared Use Path (Class I Path) - A pathway for combined pedestrian and bicycle use, that is physically separated from the roadway by grade, physical barrier, landscape median, or by a space of at least five feet.
Shoulder - a paved surface, usually from two to ten feet in width, adjacent to and contiguous with the pavement of a roadway travel lane; may be separated from the roadway by a painted line and may include a rumble strip.
Sidewalk - a concrete or other paved surface meeting UDOT standards for pedestrian travel.
Skater - A person using non-motorized roller skates, in-line skates, or a skateboard.
SLRP - Statewide Long Range Transportation Plan (UDOT).
Snell Memorial Foundation - provides certification for bicycle helmets with a Snell sticker inside the helmet; tested with greater impacts and may provide greater coverage than ASTM or ANSI, according to the Bicycle Helmet Safety Institute (a local, Washington, D.C. area, nonprofit organization).
State Road - a road or highway designated as a State Route, an interstate highway, freeway, expressway, beltway, or other part of the interstate system including interchanges, or a U. S. highway that is part of the national highway system; may be two or more travel lanes; may be painted for two-way traffic or divided one-way sections; may include associated medians, barriers, fencing, islands, turn-outs, sidewalks, bikeways, multi-use paths or trails, shoulders used by bicyclists or pedestrians, rest areas, traffic control devices, structures, safety and support facilities, or amenities within the transportation corridor right-of-way.

State Transportation System - facilities and programs for providing transportation within the State of Utah; includes States Roads and other transportation facilities and programs for motorized and non-motorized travel including automobiles, commercial trucking, public transit, railway, aeronautics, bicycling, and walking, that are owned, constructed, maintained, operated or regulated by the Utah Department of Transportation.
STIP - Statewide Transportation Improvement Program (UDOT).
Statewide Transportation Improvement Program (UDOT) - The five-year plan for transportation projects approved for funding or concept development, updated annually.
Statewide Long Range Transportation Plan (UDOT) - The UDOT long range (20-year) transportation plan, as most recently approved, including plans, documents or inventories approved by reference.
Structures - bridges, overpasses, viaducts, underpasses, box culverts, tunnels or other supportive or auxiliary elements of a road, sidewalk, path, or trail, including abutments, railings, and other fixtures.
Support Facilities - see Amenities
TIP - Transportation Improvement Program (MPOs)
Transportation linkage - a path or other facility that has a linkage to the transportation system, as for a primarily recreational path that diverts pedestrians and bicyclists that would otherwise be using the highway.
Transportation purpose - a sidewalk, bikeway, combined pedestrian/bicycle shared use path, or multi-use trail serving the purpose of a transportation corridor; may be a commuter facility or primarily recreational facility also serving a transportation function or having a transportation linkage (the exception being a closed loop trail or other facility that does not benefit the State transportation system by removing bicycles and pedestrians currently using or expected to use the vehicular lanes or shoulders of a State road or other State or federally supported roadway).
USC - Utah State Code.
WFRC - Wasatch Front Regional Council, metropolitan planning organization for urbanized areas of Salt Lake, Davis, and Weber Counties.

APPENDIX B - DOCUMENT REFERENCES

The following references were used and may be referred to in the *Statewide Pedestrian and Bicycle Plan*:

The *AASHTO Guide for the Development of Bicycle Facilities*, 1991

Selecting Roadway Design Treatments to Accommodate Bicycles, US DOT - FHWA, 1994

The Uniform Vehicle Code

The Manual on Uniform Traffic Control Devices (MUTCD), 1988

A Policy on Geometric Design of Highways and Streets, AASHTO, 1994

Manual and Specifications on School Crossing Zones, Supplement to Part VII of the MUTCD, UDOT Division of Traffic and Safety, 1992

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)

The Utah State Code

Utah Administrative Code, Utah Department of Transportation Policies and Procedures

The Americans With Disabilities Act

Nationwide Personal Transportation Study, U. S. DOT, FHWA, 1990

Pro Bike News - various issues

Bicycle and Pedestrian Planning Under ISTEA, Participant Workbook for NHI Course No. 15135, U. S. DOT, FHWA, Publication no. FHWA-HI-94-028, June 1994

Share the Road: Let's Make America Bicycle Friendly, The Surface Transportation Policy Project, Environmental Working Group, and the Bicycle Federation of America, May 1997

Mean Streets, The Surface Transportation Policy Project, Environmental Working Group, and the Bicycle Federation of America, 1997

NBPC Technical Brief: The Economic and Social Benefits of Off-Road Bicycle and Pedestrian Facilities, Technical Assistance Series, Number 2, National Bicycle and Pedestrian Clearinghouse, September 1996

Physical Activity and Health: A Report of the Surgeon General, U. S. Department of Health and Human Services, July 1996

Utah Crash Summary, Utah Department of Public Safety, Highway Safety Office, 1995

Safe & Sober Campaign, National Highway Transportation Safety Administration, December 1996

Bicycle Planning and Facility Workshop, Program Materials, Northwestern University Traffic Institute, June 1996

Utah Valley Non-Motorized Transportation System, Mountainland Association of Governments, November 1996

Utah Valley Area Technical Study survey and report, Mountainland Association of Governments, 1974

Wasatch Front Region Short Range Bicycle Plan, Wasatch Front Regional Council, March 1987

Travel Model Recalibration Study and Home Interview Survey, Wasatch Front Regional Council, 1994

Salt Lake Area Bicycle Study, UDOT Urban Transportation Planning Section, Wasatch Front Regional Council, National Highway Traffic Safety Administration, Federal Highway Administration, Utah Department of Public Safety, January 1976

Statewide Long Range Transportation Plan, Utah Department of Transportation, 1995

Statewide Transportation Improvement Program, Utah Department of Transportation, 1996

Public Involvement Procedures for Planning and Programming, Utah Department of Transportation, 1995

Oregon Bicycle and Pedestrian Plan, June 14, 1995

California Dept of Transportation Bikeway Planning and Design / Highway Design Manual, Chapter 1000, July 1993

Florida Pedestrian Planning and Design Guidelines, May 1996

Florida Bicycle Facilities Planning and Design Manual, April 1996

State of Wyoming, information and maps provided by the Statewide Pedestrian and Bicycle Planning Program

State of Colorado, information provided by the Statewide Pedestrian and Bicycle Planning Program

Association of Pedestrian and Bicycle Professionals, information obtained through networking service over the Internet

Greenways: A Guide to Planning, Design, and Development, Loring LaB. Schwarz, Editor, Charles A. Fink and Robert M. Searns, Authors, The Conservation Fund, Island Press, 1993

Trails for the Twenty-First Century: Planning, Design, and Management Manual for Multi-Use Trails, Karen-Lee Ryan, Editor, Charles A. Fink, Peter Lagerwey, Diana Balmori, and Robert M. Searns, Authors, Rails-to-Trails Conservancy, Island Press, 1993.

APPENDIX C - STATE OF UTAH AND FEDERAL CODES, REGULATIONS, AND POLICIES PERTAINING TO BICYCLES AND PEDESTRIANS

This section includes photocopied materials from the Utah State Code (USC) and the Utah Administrative Code (UAC):

USC Title 27 Highways

Chapter 12 Highway Code

Article 1 Legislative Intent and Definitions

USC 27-12-2. Definitions

27-12-7. General duties of the department

27-12-111. Authority to provide and maintain limited-access facilities - Powers of highway authorities.

27-14-6. Pedestrian safety to be considered in highway planning.

Title 41 Motor Vehicles

Chapter 1 Motor Vehicle Act

Part 1 Administration

41-1a-102. Definitions.

Chapter 6 Traffic Rules and Regulations

Article 1 Definitions of Terms

41-6-1. Definitions

Article 3 Traffic Signs, Signals and Markings

41-6-20 through 26

Article 7 Regulations Applicable to Driving on Right Side of Highway, Overtaking, Passing and Other Rules of the Road

41-6-64 and 65

Article 9 Right of Way

41-6-76.10

Article 10 Pedestrian's Rights and Duties

41-6-77 through 82.50

Article 11 Bicycles, Regulation of Operation

41-6-83 through 90

UAC R907-40-1. Informing Citizens, Government Agencies, Nondiscrimination.

R918-3. Snow Removal

R920-4. Policy for Special Road Use

R926-4. Enhancements

APPENDIX D - AGENCIES PROVIDING SAFETY AND EDUCATIONALPROGRAMS

Utah Department of Transportation
4501 South 2700 West, Salt Lake City UT

- **Bicycle and Pedestrian Planning Program**
  Office of Program Development, phone 801-965-3897
  Box 143600, Salt Lake City UT 84114-3600
- **Operation Lifesaver**
  Traffic and Safety Division, phone 801-965-4259
  Box 143200, Salt Lake City UT 84114-3200
- **Community Relations**, phone 801-965-4104
  Box 141200, Salt Lake City UT 84114-1200

Utah Department of Public Safety

- **Highway Safety Office**, phone 801-293-2480
  5263 South 300 West, Suite 202
  Salt Lake City, UT 84107

Utah Safety Council, phone 801-262-5400

- 5263 South 300 West, Murray UT 84107

Utah Department of Health
Violence and Injury Prevention Program, phone 538-6864
288 North 1460 West
Box 142106, Salt Lake City UT 84114-2106

Utah Office of Education
Pupil Transportation, phone 801-538-7666
250 East 500 South, Salt Lake City UT 84111

Utah Department of Natural Resources
Parks and Recreation Division, phone 801-538-7344
1636 West North Temple
Box 146001, Salt Lake City UT 84114-6001

Utah Governor's Council on Health and Physical Fitness, phone 801-538-6120
Box 142872, Salt Lake City UT 84114-2872

Salt Lake Valley Health Department, phone 801-944-6684
1954 East Fort Union Blvd, Salt Lake City UT 84121

Also check with: your County Health Dept, Sheriff's Dept, County or City Parks and Recreation Dept, County or City Transportation or Engineering Dept, City Police Dept, or Local School District.

APPENDIX E - PUBLIC INVOLVEMENT

The following activities were included in the public involvement efforts for soliciting input during the development of the *Statewide Pedestrian and Bicycle Plan* and for meeting public needs for planning, safety, transportation, and tourism information:

- Informational flier, prepared February 1996
- Utah Chapter of the American Planning Association, Winter Conference, distributed informational flier, February 1996
- Bicycle/Pedestrian Plan Comment Card, April 1996 - distributed by personal contact with cities, counties, bicycle clubs, mail out to bicycle shops, various special events, enclosed with informational requested by resident and out-of-state tourists, with invitational letter to provide input and comments following their biking tour
- Statewide Biking...Walking...ADA Accessibility Informational Questionnaire, July 1996 - distributed through same channels as Comment Card (included only with in-state resident tourism information packages) and additionally made available through UDOT Internet web site and by e-mailing to State agencies' public information officers
- Information prepared for UDOT Internet web site on planning activities, resources available, contacts with other groups for more information, safety and biking laws, citizen response questionnaire, announcement of plan availability, hot links to other agencies providing biking and walking information
- Article published in the newsletter for the Utah Chapter of the American Planning Association, 1996
- Article published in the *Fast Lane*, Utah Dept of Transportation employee newsletter, 1996
- Article submitted to *Capitol Connections*, State of Utah employee newsletter, not published
- *Cycling Utah* published Bicycle/Pedestrian Plan solicitation of input announcement, 1996
- Presentations to Utah League of Towns and Cities Road School, St. George, 1996 and 1998
- Presentations at Transportation Engineers' Conference, Snowbird, 1996 and 1998
- Accepted planning input through questionnaires, cards, letters, e-mails, telephone calls, meetings - ongoing
- UTA Bike Bonanza, August 1996 - booth, drawings for helmets, provided other safety information and materials, distributed bike plan questionnaire, flier, comment card
- Bike Month in Utah, May 1997, designated by Governor Michael O. Leavitt, worked in conjunction with bicycle advocacy groups; sent articles on bicycling safety and motorist awareness to community newspapers in conjunction with Bike Month, resulting in several newspaper articles; sent letters offering safety

brochures, comment cards, questionnaires, and providing samples to bicycle shops throughout Utah and requesting their assistance in educating their customers about safe bicycling during Bike Month and on an ongoing basis, resulting in several shops requesting supplies of safety brochures for their customers; press releases on Bike Month

- Various contacts with the press and other media, with resulting coverage of planning and safety issues related to walking and biking
- Provided informational packages for Transportation Demand Seminar conducted by UDOT I-15 Team for large (over 100 employees) employers
- Invited speaker for meeting of Bonneville Bicycle Touring Club, with press coverage by *Cycling Utah*, 1997
- Toys R Us Bicycle Safety Awareness Day, June 1997 - provided educational materials and give-away safety items
- UTA Bike Bonanza and Salt Lake City Arts Festival, June 1997 - provided planning and safety information and give-aways to be distributed by UTA staff
- Notices of availability mailed to citizens providing addresses through their comments, bicycle shops and bike clubs, public agencies, publication in *Cycling Utah*, posting on UDOT Internet web site, press releases, and other avenues
- Draft plans made available through UDOT offices statewide, some public libraries, some mail-outs, and posting on UDOT Internet web site
- Contacts and participation with citizen committees, contacts with public agencies during statewide and regional planning processes, contacts with the general public
- Statewide Planning public involvement meetings (eleven conducted statewide Fall 1996, twelve in 1997, seven in 1998)
- 1998 questionnaire and mapping project for input to statewide bicycle maps for planning and cyclist information.

APPENDIX F

Introduction

The **Utah Crash Summary** is produced annually, and identifies and describes the trends and effects of traffic crashes in Utah. The statistics within the Utah Crash Summary describe factors that contribute to the occurrence of crashes, and crash-related injuries and fa5talities. This report is designed to heighten awareness about traffic safety by allowing safety program specialists and public health personnel to identify areas where education or programs may be focused in an effort to reduce traffic-related injuries and fatalities.

The data for this summary is derived from Utah crash reports. These reported are completed by law enforcement officers throughout the state who collect data from crash scenes on public roadways. Information is collected when a crash involves injuries or fatalities, when the jurisdiction in which the crash occurs requires it, or when the responding officer determines that a report is warranted.

Crash reports are forwarded to the Utah Department of Transportation (UDOT) for central collection. UDOT reviews the crash report forms and enters the data into a database called the Crash Analysis Reporting System (CARS). Beginning in 1997, all private property crashes ere excluded from CARS. Since private property crashes accounted for approximately 10% of crashes in previous years, the decrease in crashes since 1997 is due in part to the exclusion of private property crashes. Additional information is collected on fatal crashes and compiled into a separate database, the Fatality Analysis Reporting System (FARS). This database was used for the reporting of alcohol and other drug-related fatal crashes and fatalities.

This report was prepared by the Utah Crash Outcome Data Evaluation System (CODES) project located at the Intermountain Injury Control Research Center, University of Utah School of Medicine. For more information, please contact:

Stacey Knight
Utah Crash Outcome Data Evaluation System (CODES)
410 Chipeta Way, Suite 222
Salt Lake City, Utah 84108
(801) 581-6410

This crash summary is also available on the internet at
http://codes.med.utah.edu/UtahCrash1999

The following tables from the *Utah Crash Summary 1999* are included in the *Statewide Pedestrian and Bicycle Plan* with permission from the Highway Safety Office Director, Utah Department of Public Safety, 1999.

1999 Drivers Involved in Pedestrian Crashes

Table 3.11 and Figure 3.05 shows that drivers between the ages of 20 to 24 years represented the greatest percentage (16.7%) of drivers involved in a pedestrian crash. The largest percentage (22.2%) of drivers involved in fatal pedestrian crashes were in the age groups 25 to 29 years.

Table 3.11 Age of Drivers in Total Crashes, Injury Crashes and Fatal Crashes Involving Pedestrians, Utah 1999

Driver's Age	Ped. Total Crashes # Drivers	%	Ped. Injury Crashes # Drivers	%	Ped. Fatal Crashes # Drivers	%
<15	0	0.0%	0	0.0%	0	0.0%
15 - 19	114	15.6%	106	15.8%	7	19.4%
20 - 24	122	16.7%	114	17.0%	6	16.7%
25 - 29	82	11.2%	72	10.7%	8	22.2%
30 - 34	44	6.0%	39	5.8%	3	8.3%
35 - 39	73	10.0%	65	9.7%	3	8.3%
40 - 44	56	7.7%	50	7.5%	3	8.3%
45 - 49	37	5.1%	33	4.9%	3	8.3%
50 - 54	31	4.2%	28	4.2%	2	5.6%
55 - 59	20	2.7%	18	2.7%	0	0.0%
60 - 64	15	2.0%	13	1.9%	0	0.0%
65 - 69	10	1.4%	10	1.5%	0	0.0%
70 - 74	17	2.3%	16	2.4%	0	0.0%
75 - 79	7	1.0%	7	1.0%	0	0.0%
80 - 84	6	0.8%	6	0.9%	0	0.0%
85 +	2	0.3%	2	0.3%	0	0.0%
Missing	96	13.1%	91	13.6%	1	2.8%
Grand Total	732	100.0%	670	100.0%	36	100.0%

Note: More than one driver may be involved in a pedestrian crash and driver information may be missing (e.g. a hit and run).

The factors contributing to bicycle-motor vehicle crashes are listed in Table 4.10. These factors were coded by the law officers at the scene for motor vehicles involved in the crash. The officer may record no contributing factor or up to two different contributing factors. The primary contributing factors recorded for total bicyclist-motor vehicle crashes and injury crashes were "improper lookout", "failure to yield right of way", and "hit and run". "DUI" and "had been drinking" accounted for 0.8% of contributing factors in total bicyclist-motor vehicle crashes and injury crashes.

Table 4.10 Contributing Factors of Bicyclist-Motor Vehicle (B-MV) Total Crashes and Injury Crashes, Utah 1999

Contributing Factors	B-MV Total Crashes		B-MV Injury Crashes		B-MV Fatal Crashes	
	#	%	#	%	#	%
Improper Lookout	261	49.2%	238	49.1%	1	33.3%
Failed to Yield the Right of Way	130	24.5%	123	25.4%	0	0.0%
Hit and Run	56	10.5%	49	10.1%	0	0.0%
Other Improper Driving	19	3.6%	14	2.9%	1	33.3%
Improper Turn	16	3.0%	16	3.3%	0	0.0%
Speed Too Fast	12	2.3%	10	2.1%	0	0.0%
Windshield Not Clear	7	1.3%	6	1.2%	1	33.3%
Disregarded Traffic Signal	6	1.1%	6	1.2%	0	0.0%
Passed Stop Sign	5	0.9%	5	1.0%	0	0.0%
Following Too Closely	3	0.6%	3	0.6%	0	0.0%
Failed to Signal	3	0.6%	3	0.6%	0	0.0%
Driving Under the Influence	2	0.4%	2	0.4%	0	0.0%
Improper Overtaking	2	0.4%	1	0.2%	0	0.0%
Had Been Drinking	2	0.4%	2	0.4%	0	0.0%
Headlights Glaring	1	0.2%	1	0.2%	0	0.0%
Eyesight Defective Uncorrected	1	0.2%	1	0.2%	0	0.0%
Ill	1	0.2%	1	0.2%	0	0.0%
Improper Backing	1	0.2%	1	0.2%	0	0.0%
Brakes Defective	1	0.2%	1	0.2%	0	0.0%
Towed Vehicle	1	0.2%	1	0.2%	0	0.0%
Wrong Way on One Way Street	1	0.2%	1	0.2%	0	0.0%
Grand Total	531	100.0%	485	100.0%	3	100.0%

1999 Drivers Involved in Bicyclist-Motor Vehicle Crashes

Drivers between the ages of 15 to 24 years represented the greatest percentage of motor vehicle drivers (31.0%) involved in a total bicyclist-motor vehicle crash, while drivers aged 25 to 29 years accounted for one-third of drivers (33.3%) involved in fatal bicyclist-motor vehicle crashes (Table 4.11).

Table 4.11 Age of Drivers Involved in Bicyclist-Motor Vehicle (B-MV) Total Crashes, Injury Crashes and Fatal Crashes, Utah 1999

	B-MV Total Crashes		B-MV Injury Crashes		B-MV Fatal Crashes	
Driver's Age	# Drivers	%	# Drivers	%	# Drivers	%
<15	0	0.0%	0	0.0%	0	0.0%
15 - 19	132	16.5%	120	16.4%	0	0.0%
20 - 24	116	14.5%	104	14.2%	1	16.7%
25 - 29	89	11.1%	82	11.2%	2	33.3%
30 - 34	73	9.1%	70	9.6%	0	0.0%
35 - 39	69	8.6%	59	8.1%	1	16.7%
40 - 44	70	8.7%	63	8.6%	1	16.7%
45 - 49	47	5.9%	42	5.7%	1	16.7%
50 - 54	37	4.6%	32	4.4%	0	0.0%
55 - 59	27	3.4%	27	3.7%	0	0.0%
60 - 64	20	2.5%	19	2.6%	0	0.0%
65 - 69	6	0.7%	5	0.7%	0	0.0%
70 - 74	17	2.1%	16	2.2%	0	0.0%
75 - 79	13	1.6%	13	1.8%	0	0.0%
80 - 84	3	0.4%	3	0.4%	0	0.0%
85 +	4	0.5%	4	0.5%	0	0.0%
Missing	79	9.9%	72	9.8%	0	0.0%
Grand Total	802	100.0%	731	100.0%	6	100.0%

Note: More than one driver may be involved in bicyclist-motor vehicle crashes and driver information may be missing (e.g. a hit and run).

1999 Pedestrian Crashes by County

The rates of pedestrian-involved crashes, injury crashes and fatal crashes by county are shown in Table 3.02. There are two different rates given; one based on population of the county, and another on the miles traveled in the county. The top three counties for pedestrian-involved crashes and injury crashes based on miles traveled were Weber, Salt Lake and Utah.

Table 3.02 Total Crashes, Injury Crashes and Fatal Crashes Involving Pedestrians by County, Utah 1999

	Ped. Total Crashes			Ped. Injury Crashes			Ped. Fatal Crashes		
County	#	Rate per 100 MVMT	Rate per 10,000 Population	#	Rate per 100 MVMT	Rate per 10,000 Population	#	Rate per 1000 MVMT	Rate per 10,000 Population
Beaver	1	0.5	1.6	1	0.5	1.6	0	0.0	0.0
Box Elder	11	1.3	2.7	10	1.1	2.4	1	1.1	0.2
Cache	24	3.2	2.7	22	2.9	2.4	2	2.6	0.2
Carbon	2	0.6	0.9	2	0.6	0.9	0	0.0	0.0
Daggett	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Davis	48	2.4	2.1	42	2.1	1.8	5	2.5	0.2
Duchesne	4	2.2	2.8	4	2.2	2.8	0	0.0	0.0
Emery	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Garfield	1	0.8	2.2	1	0.8	2.2	0	0.0	0.0
Grand	2	0.7	2.0	2	0.7	2.0	0	0.0	0.0
Iron	6	1.1	1.9	6	1.1	1.9	0	0.0	0.0
Juab	1	0.3	0.0	1	0.0	0.0	0	0.0	0.0
Kane	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Millard	2	0.5	1.6	2	0.5	1.6	0	0.0	0.0
Morgan	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Piute	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Rich	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Salt Lake	366	5.1	4.3	336	4.7	4.0	14	1.9	0.2
San Juan	5	2.0	3.8	5	2.0	3.8	0	0.0	0.0
Sanpete	5	2.2	2.3	4	1.7	1.9	1	4.3	0.5
Sevier	4	1.1	2.1	4	1.1	2.1	0	0.0	0.0
Summit	4	0.7	1.6	4	0.7	1.6	0	0.0	0.0
Tooele	4	0.6	1.2	3	0.5	0.9	1	1.6	0.3
Uintah	1	0.4	0.4	0	0.0	0.0	0	0.0	0.0
Utah	127	4.3	3.8	118	4.0	3.5	6	2.1	0.2
Wasatch	2	0.8	1.5	2	0.8	1.5	0	0.0	0.0
Washington	24	2.9	3.0	20	2.4	2.5	2	2.4	0.3
Wayne	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Weber	76	5.1	4.1	72	4.9	3.9	3	2.0	0.2
Statewide	720	3.3	3.4	661	3.0	3.1	35	1.6	0.2

3.4

The factors contributing to pedestrian crashes are listed in Table 3.10. These factors were coded by the officers at the scene for vehicles involved in the crash. The officer may record no contributing factor or up to two different contributing factors. The primary contributing factor recorded for all types of pedestrian crashes was "improper lookout" followed by "failed to yield right of way". Alcohol and other drugs appear to be an important contributing factor in fatal pedestrian crashes. While "DUI", "had been drinking" and "under the influence of drugs" account for 3% of contributing factors in all pedestrian crashes, these factors accounted for 6% in fatal pedestrian crashes.

Table 3.10 Contributing Factors in Total Crashes, Injury Crashes and Fatal Crashes Involving Pedestrians, Utah 1999

Contributing Factors	Ped. Total Crashes		Ped. Injury Crashes		Ped. Fatal Crashes	
	#	%	#	%	#	%
Improper Lookout	186	36.5%	172	36.2%	4	23.5%
Failed to Yield the Right of Way	115	22.6%	110	23.2%	2	11.8%
Hit and Run	81	15.9%	75	15.8%	2	11.8%
Other Improper Driving	35	6.9%	33	6.9%	0	0.0%
Speed Too Fast	16	3.1%	13	2.7%	3	17.6%
Improper Parking	8	1.6%	8	1.7%	0	0.0%
Windshield Not Clear	7	1.4%	7	1.5%	0	0.0%
Non-Contact Vehicle Involved	7	1.4%	4	0.8%	3	17.6%
Improper Backing	7	1.4%	6	1.3%	1	5.9%
Had Been Drinking	7	1.4%	6	1.3%	1	5.9%
Driving Under the Influence	7	1.4%	7	1.5%	0	0.0%
Improper Turn	6	1.2%	5	1.1%	0	0.0%
Disregarded Traffic Signal	6	1.2%	5	1.1%	0	0.0%
Improper Overtaking	4	0.8%	4	0.8%	0	0.0%
Passed Stop Sign	3	0.6%	3	0.6%	0	0.0%
Other Defective Condition	3	0.6%	3	0.6%	0	0.0%
Following Too Closely	3	0.6%	3	0.6%	0	0.0%
Under the Influence of Drugs	2	0.4%	2	0.4%	0	0.0%
Vehicle Rolling in Traffic Lane	1	0.2%	1	0.2%	0	0.0%
Headlights Insufficient or Out	1	0.2%	0	0.0%	1	5.9%
Headlights Glaring	1	0.2%	1	0.2%	0	0.0%
Drove Left of Center	1	0.2%	1	0.2%	0	0.0%
Brakes Defective	1	0.2%	1	0.2%	0	0.0%
Asleep	1	0.2%	1	0.2%	0	0.0%
Wrong Side of Road	0	0.0%	0	0.0%	0	0.0%
Failed to Signal	0	0.0%	0	0.0%	0	0.0%
Down Hill Runaway	0	0.0%	0	0.0%	0	0.0%
Collision Fire	0	0.0%	0	0.0%	0	0.0%
Cargo Loss or Shift	0	0.0%	0	0.0%	0	0.0%
Grand Total	509	100.0%	475	100.0%	17	100.0%

1999 Bicyclists by County

Table 4.13 shows the number of bicyclists, injured bicyclists and bicyclist fatalities involved in motor vehicle crashes by county. While most bicyclists were involved in crashes occurring in Salt Lake County, this county did not have the highest rates per vehicle miles traveled. The leading county for total bicyclists and injured bicyclists involved in a motor vehicle crash per million vehicle miles traveled was Utah County.

Table 4.13 Total Bicyclists, Injured Bicyclists and Bicyclist Fatalities by County, Utah 1999

	Total Bicyclists			Injured Bicyclists			Bicyclist Fatalities		
County	#	Rate per 100 MVMT	Rate Per 10,000 Population	#	Rate per 100 MVMT	Rate Per 10,000 Population	#	Rate per 10,000 MVMT	Rate Per 100,000 Population
Beaver	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Box Elder	5	0.6	1.2	5	0.6	1.2	0	0.0	0.0
Cache	39	5.1	4.5	38	5.0	4.4	0	0.0	0.0
Carbon	5	1.4	2.3	5	1.4	2.3	0	0.0	0.0
Daggett	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Davis	75	3.7	3.4	69	3.4	3.1	0	0.0	0.0
Duchesne	4	2.2	2.8	4	2.2	2.8	0	0.0	0.0
Emery	1	0.3	0.9	1	0.3	0.9	0	0.0	0.0
Garfield	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Grand	7	2.5	7.4	6	2.2	6.3	1	36.3	10.6
Iron	10	1.8	3.4	10	1.8	3.4	0	0.0	0.0
Juab	3	0.9	3.9	2	0.6	2.6	0	0.0	0.0
Kane	1	0.8	1.5	1	0.8	1.5	0	0.0	0.0
Millard	1	0.2	0.8	1	0.2	0.8	0	0.0	0.0
Morgan	2	1.7	3.0	2	1.7	3.0	0	0.0	0.0
Piute	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Rich	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Salt Lake	419	5.8	5.0	373	5.2	4.5	4	5.6	0.5
San Juan	5	2.0	3.8	5	2.0	3.8	0	0.0	0.0
Sanpete	3	1.3	1.5	3	1.3	1.5	0	0.0	0.0
Sevier	3	0.8	1.6	3	0.8	1.6	0	0.0	0.0
Summit	3	0.5	1.2	3	0.5	1.2	0	0.0	0.0
Tooele	6	0.9	1.8	6	0.9	1.8	0	0.0	0.0
Uintah	5	1.8	2.1	4	1.5	1.7	1	36.7	4.1
Utah	181	6.2	5.6	167	5.7	5.1	1	3.4	0.3
Wasatch	6	2.5	4.6	6	2.5	4.6	0	0.0	0.0
Washington	20	2.4	2.6	20	2.4	2.6	0	0.0	0.0
Wayne	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Weber	51	3.4	2.8	43	2.9	2.4	0	0.0	0.0
Statewide	855	3.9	4.2	777	3.6	3.8	7	3.2	0.3

4.15

CONVERSION TABLE

for Common Measurements

(Refer to Appropriate Guidance to Determine Minimum and Preferred Widths, Clearances, Etc.)

BIKEWAYS	**"ENGLISH"**	**METRIC**
Bike lane	4, 5, 6 feet	1.2, 1.5, 1.8 meters
Wide shared lane	14 - 15 feet	4.2 - 4.5 meters
Multi-use or Shared-use path	10 feet	3 meters
(high use)	12 feet	3.6 meters
Bike lane stripe	8 inches	200 millimeters
Shoulder stripe	4 inches	100 millimeters
Vertical clearance	10 feet	3 meters
Shy distance	2 feet	0.6 meters
Rail Height	52 inches	1.4 meters

Dimensions are clear, paved space, exclusive of curbs, gutter pan, rumble strips, and obstructions.

1. *Final Report - The National Bicycling and Walking Study: Transportation Choices for a Changing America*, page vi, U. S. DOT Publication No. FHWA-PD-94-023

2. *Pro Bike News*, Volume 17, Number 6, Bicycle Federation of America, June 1977

3. *NBPC Technical Brief: The Economic and Social Benefits of Off-Road Bicycle and Pedestrian Facilities,* Technical Assistance Series, Number 2, National Bicycle and Pedestrian Clearinghouse, September 1996.

4. *Ibid.*

5. *Ibid.*

6. *Bicycle and Pedestrian Planning Under ISTEA, Participant Workbook*, NHI Course No. 15135, U. S. Department of Transportation (DOT), Federal Highway Administration, Publication No. FHWA-HI-94-028, June 1994

7. *A Summary: Bicycle and Pedestrian Provisions of the Federal-Aid Program, as Amended by the Transportation Equity Act for the 21st Century*, U.S. Department of Transportation, Publication No. FHWA-PD-98-049, HEP-10/8-98 (20M)E.

8. *Bicycle and Pedestrian Planning Under ISTEA, Participant Workbook*, NHI Course No. 15135, U. S. Department of Transportation, Federal Highway Administration, Publication No. FHWA-HI-94-028, June 1994

9. *A Summary: Bicycle and Pedestrian Provisions of the Federal-Aid Program, as Amended by the Transportation Equity Act for the 21st Century*, U.S. Department of Transportation, Publication No. FHWA-PD-98-049, HEP-10/8-98 (20M)E.

10. Allstate Insurance Company, Draper, UT, telephone inquiry, June 1997.